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# CHINA

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## INTERNATIONAL AGRICULTURE AND TRADE REPORTS

# CHINA

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## Summary

### *China's Agricultural and Industrial Growth--Can It be Sustained?*

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U.S. agricultural exports to China are expected to increase in 1994 because of increased cotton sales, reversing the 1993 deficit of \$75 million. China's 1993 agricultural trade dropped 1.3 percent to \$23.6 billion. After 2 years of rapid growth, China's corn exports rose moderately from 10.6 million tons in 1992 to 11.1 million in 1993.

China's economy grew 13.4 percent in 1993, only slightly below 1992 and the second highest since the 1984 record of 14.5. However, the rapid growth fueled 13-percent inflation. Lukewarm market demand in early 1994 dampened the rapid economic growth, fostering mounting consumer goods stockpiles. Tighter government control of the money supply will likely slow economic growth in 1994 to about 10 percent. Inflation is expected to remain at about 13 percent.

China's officials project 1994 grain production will reach 450 million tons, down from the record 456 million crop in 1993. In marketing year 1994/95, China will likely be a net exporter of rice and corn and reduce wheat imports to about 7 million tons. Major grain marketing reform policies implemented in 1993 and 1994 raised the importance of prices, profits, and quality for producers, processors, and consumers. However, even after these reforms, the government continues to intervene in the grain economy.

Oilseed production in 1994 is likely to decline slightly or remain unchanged after increasing 16 percent in 1993 to a record 38.3 million tons. Enormous increases in soybean and peanut output in 1993 offset declines in other oilseeds. Because of rapid economic growth and population increases, China's long-run domestic demand for edible vegetable oil and soybean meal will continue rising.

China's 1993/94 cotton output fell 17 percent to 3.74 million tons due to bollworms and flooding. This contributed to a 4-percent decline in consumption. Area is expected to increase in 1994/95, but still fall short of the government's 6-million-

hectare target. Imports are expected to remain about unchanged in 1994/95 as we continue to exceed production. The exact level will depend on the success of the government in regaining control over cotton procurement and distribution.

China has applied to join the General Agreement on Tariffs and Trade (GATT). Accession negotiations will result in a protocol outlining the changes required in China's trade system and tariff reduction commitments. In the short run, accession will result in China importing more edible oils and wheat and exporting more rice. In the long run, China will likely import more bulk commodities such as corn or oilseeds because of limited arable land and mounting demand for meat.

Total U.S.-China bilateral trade expanded in the 1990's, though agricultural trade slowed as U.S. exports declined because of lower wheat shipments. U.S. exports of high-value products have risen steadily because of growing consumer demand for U.S. food products in China's rapidly developing coastal and urban areas. U.S. food exports are expected to rise further as China liberalizes its import markets.

China is the world's largest producer and consumer of vegetables and is the fifth leading exporter. In 1991, China's farmers were estimated to have produced more than 170 million tons of vegetables. In 1993, the United States exported \$1.5 million worth of vegetables to China while importing \$103 million from China. In the coming decade, U.S. vegetable trade will continue to grow, with competition between the U.S. and China for foreign vegetable markets increasingly keen.

In 1992, the State Statistical Bureau published the results of a 1991 rural household survey that suggested national grain output may be underreported, and farmers hold large grain stocks, feed substantial amounts of rice to livestock, and increasingly turn to rural open markets to buy and sell grain.

# China's Economy Expanded Rapidly in 1993

*China's 1993 economic growth of 13.4 percent was only slightly below 1992 and the second highest since the 1984 record. The rapid growth fueled rising double-digit inflation, averaging 13 percent in 1993 and peaking at 23.2 percent in February 1994. Lukewarm market demand beginning in March 1994 put the brakes on rapid economic growth and left mounting stockpiles of consumer goods. Despite continuing strong investment in fixed assets by the government, but a tightly controlled money supply, China's economy in 1994 is expected to grow at a slower pace, likely over 10 percent. Retail prices are likely to increase for the rest of the year. The inflation rate is expected to average above 1993's 13 percent. [Francis C. Tuan]*

## GNP Growth Rate Up Sharply in 1993

China's 1993 gross domestic product (GDP) reached 3.14 trillion yuan (\$545 billion), a real growth rate of 13.4 percent over 1992. The real rate of gross national product (GNP) increase was only slightly lower than the 13.6 percent in 1992, but much higher than the 8.2 percent in 1991 and 4.1 percent in 1990. Growth in 1993 has been the second fastest since 1984, when the real rate of GNP increase was 14.7 percent.

Positive developments in 1993 included continued expansion in agricultural production, rapid and steady industrial growth, particularly by village and township enterprises, and joint ventures, brisk retail sales, expanded total trade (imports and exports) and tourism earnings, and higher per capita income. Per capita GDP was 2,648 yuan (US\$460) in 1993, a real growth of 12.1 percent over the previous year. Despite such favorable developments, 1993 was also characterized by halting reform of debt-ridden state enterprises, worsening government fiscal arrears, overextended investment in fixed assets, and incompatible development of basic industries and infrastructure. The rapidly expanding money supply, which peaked in April 1993 with 41.2 percent over the same period the previous year, was largely responsible for rising market prices.

China's official budget deficit for 1993 was reported to be 20 billion yuan. If Western accounting procedures are applied (for instance, excluding domestic and foreign public debt from revenue, including repayments on these debts as an expenditure and treating enterprise-loss subsidies as an expenditure

rather than a revenue offset), China's true 1993 central budget deficit should be at least 30 billion yuan, about 50 percent more than the official estimate. Nevertheless, compared with the majority of other developing countries, even this higher deficit figure is relatively low, at 1 percent of GDP. In addition, China's Ministry of Finance announced that China has already adopted new procedures for calculating the government deficit starting this year.

Income from debt will no longer be included in total revenues, and debt service will no longer be included in total expenditures. Such an adjustment indicates that the Chinese government budget deficit is expected to more than double, reaching about 67 billion yuan in 1994, according to China's Finance Minister, Liu Zhongli. During the National People's Congress in March 1994 Minister Liu warned that the difficulties in implementing a new tax system and widespread tax evasion were making it very difficult to predict revenues. He reported that the 1994 government deficit will be funded largely by issuing domestic treasury bonds (2).

To improve state revenue, China's government implemented a new tax system in 1994 to meet the needs of China's more market-oriented economy. The guiding principle of the tax reform is to consolidate all tax laws, set fair tax burdens, streamline the country's tax system, rationalize state and local tax authorities, bring order to tax distribution procedures, and, finally, ensure state revenue.

The main tax reforms include a standardized value-added tax on production, wholesale, retail, imported products, manufacture, repairs, and replacements, and income taxes on enterprises and individuals. Other tax reforms, reportedly, cover resource products, land, excessive profits from real-estate transactions, and an adjustment on urban construction-safeguard tax and land-use tax. In reality, imposition of the new system, for instance, the value-added tax, has confused retail and wholesale transactions. Smoothly implementing the new tax system and successfully managing the collection system to gain revenue from the rapidly growing private as well as collective, or village and township, enterprises, will be critical to China's future state revenues.

In 1993, government subsidies to state enterprises for losses incurred remained a heavy burden on the central budget, reaching 41.3 billion yuan. However, China's government

Table 1--China's macroeconomic indicators, 1992-93

Indicator	Units	1992	1993*
Population	Million	1,171.7	1,185.2
GDP growth /1	Percent	13.6	13.4
GDP	Bil. yuan	2,436.3	3,138.0
Change in CPI	Percent	5.4	13.0
Currency in circulation	Bil. yuan	432.9	585.6
Total state revenues	Bil. yuan	415.3	508.8
Total state expenditures	Bil. yuan	439.0	528.7
State budget deficit	Bil. yuan	23.7	19.9
Fixed asset investment /2	Bil. yuan	760.2	1182.9

\* Statistics for 1993 are China's government targets.  
/1 GDP growth in constant value terms. /2 All sources.

Sources: 1993 Communiqué and 1994 Statistics Abstract.



has managed to gradually reduce price subsidies by raising prices for grain and edible-oils urban rationing during the past 3 years and by liberalizing its sugar industry during the past 4 years. As a result, in 1993, expenditures for price subsidies were reduced to 29.6 billion yuan, down 8 percent from 1992 and 22 percent below that of 1990. Despite the positive steps made towards reducing government outlays, China's Ministry of Finance recently proposed to spend 37.3 billion yuan for price subsidies in 1994. Obviously, additional reforms in the state-run enterprises and the pricing system are still urgently needed in the coming years.

China's 1993 industrial production continued to grow rapidly. The 1993 gross value of industrial output (GVIO), in constant terms, grew at a rate of 29 percent, up from a previous high of 27.5 percent in 1992 and 14.5 percent in 1991 (table 2). For the first time, China's State Statistical Bureau (SSB) published the value-added industrial and value-added agricultural output for 1993. The 1993 value-added industrial output was up 21.1 percent and reached 1,414 billion yuan, compared with the 1992 rate of output growth of 20.5 percent 1992 and the 1991 rate of 13.5 percent. The growth of joint ventures, cooperative and solely foreign-owned enterprises grew the fastest, at 46.2 percent.

In 1993, the total output of state enterprises grew 6.4 percent, far below the growth of collective enterprises, 28.6 percent, including the 41.3 percent increase from industries run by villages and townships. China's light industry has developed more rapidly since reform began in the late 1970's. But, the growth of light industry fell behind heavy industry in 1992 and was again behind in 1993. The value-added output of light industry was 660 billion, up 19.9 percent, and that of heavy industry was 745 billion, up 22.2 percent.

Although productivity of state enterprises as a whole reportedly improved slightly, according to China's 1994 Economic Communique, a different report published by the State Economic and Trade Commission (SETC) indicates that China's ailing state enterprises suffered losses of at least 130 billion yuan in 1993. The same report also revealed that the multiple debts among state enterprises stood at 140 billion in the same year (11). As mentioned, the output value of the overall state industrial sector grew moderately in 1993, but the growth was far lower than that for collective, individual, and foreign-owned operations. That is due to large numbers of state enterprises that remained plagued by over-staffing, low productivity rates, poor product quality control, large inter-en-

terprise debts, cost overruns, losses created by decontrolled input prices but controlled ex-factory prices, and huge stockpiles of unsold inventory. According to China's SSB, at the end of April this year, unsold products held by state enterprises grew 13.3 percent in value over the same period last year. Moreover, the increasing stockpiles are causing more enterprises to default on their debts. State enterprise debts jumped 78.4 percent by the end of June compared with the same period last year (3).

The gross value of 1993 agricultural output (GVAO) grew to 1,099 billion yuan, an increase of 7.8 percent in constant terms compared with 6.4 percent in 1992 and 3.7 percent in 1991 (table 2). In Western economic terms, China's 1993 value-added output of the agricultural sector was 665 billion yuan, up 4 percent over 1992. This was slightly lower than the 1992 growth of 4.1 percent, but higher than the increase of 2.4 percent in 1991.

Grain and oil-bearing crop outputs reached record highs, 456.4 million and 17.6 million tons, a 3.1-percent and a 7.3-percent increase, respectively, from the previous year. Production of most other major crops also rose, although cotton and sugar output declined. The cotton crop was affected by bollworm damage for 2 consecutive years and by a sharp drop in area sown to cotton after the first major insect infestation in 1992. China's livestock production continued to grow steadily as bumper grain harvests improved availability of feed supplies. Supplies of pork and poultry meat grew rapidly, facilitated by China's fast-growing economy in 1993. Aquatic output increased significantly in 1993 and reached 17.9 million tons, up 14.6 percent over 1992. Of the total, the output of freshwater products was 7.4 million tons, up 19 percent, and that of marine products was 10.4 million tons, up 12 percent.

The rural economy as a whole, including the agricultural and non-agricultural sectors, has continued to expand since reforms were introduced in 1979, particularly in terms of non-agricultural production. The output value of the non-agricultural sector surpassed that of the agricultural sector for the first time in 1987, indicating the fast change in the structure of the rural economy. The output value of the rural non-agricultural sector in China includes the production of village and township industries, rural commerce, transportation and communication, and construction. In 1993, China's rural industries earned more than \$30 billion in foreign exchange, or about one-third of the country's annual foreign exchange. For the first half of 1994, the rural industries delivered \$13.5 billion worth of goods for export, 55.2 percent more than in the same period last year.

### ***Retail Sales, Market Prices, and Trade Grew Significantly***

China's total value of retail sales of consumer goods, excluding agricultural input materials, was 1,224 billion yuan, up 26.1 percent over 1992 (11.6 percent after adjusting for inflation), compared with an increase of 17.7 percent in 1992. The value of total rural market sales rose 19.5 percent to 506 billion yuan, while urban market sales increased 31 percent to 718 billion. In 1993, retail sales of food items in China grew unevenly. Sales of food grew steadily; of which edible vegetable oils were up 7.1 percent, aquatic products 5 percent,

Table 2--Industry and agriculture output value, 1991-93

Sector /1	Units	1991	1992	1993
Total industry	Bil. yuan	2,825	3,707	5,290
State sector	% change	8.4	NA	NA
Collective sector	% change	18.0	NA	NA
Private sector	% change	24.0	NA	NA
Total agriculture	Bil. yuan	816	909	1,099
Crops	% change	0.9	1.2	5.2
Forestry	% change	7.8	2.7	8.0
Animal husbandry	% change	6.1	6.1	10.8
Sideline products	% change	1.8	8.9	NA
Aquatic	% change	6.7	9.5	18.3

NA = not available.

/1 Total industry and agriculture values calculated on the basis of current prices; growth rates calculated on the basis of comparable prices.



and liquor 4 percent. But, sales of pork, fish, and sugar were reportedly down by various degrees because of greater price increases.

The total retail sales of agricultural input materials in 1993, according to SSB reports, was 135.6 billion, 5.2 percent up over 1992, but a real decline of 7.8 percent if price increases are adjusted. In China, the majority of agricultural inputs are supplied by state enterprises. In 1993, state-owned enterprises also continued to be the major supplier of all retail goods, accounting for 40 percent of retail sales; Collective-owned enterprises 26 percent; and retail sales by rural farmers to urban residents 10.5 percent (10).

The government raised prices for a number of state-controlled commodities and services in the previous 2 years, such as crude oil, finished oil products, rolled steel, pigiron, rail freight transport, grain, and edible oils in urban areas. The government accelerated price reform in 1993 by decontrolling the price of most steel products and a portion of coal products, and cement, continuing to decontrol the purchase and sales prices of grain and edible oils, and raising the prices of railroad transportation and electric power. This, accompanied by a rapidly expanding money supply for overextended government investment in fixed assets, raised 1993 retail sales prices 13 percent, significantly higher than the 5.4 percent increase in 1992 and 2.9 percent increase in 1991.

The overall cost-of-living index (including consumer goods and services) rose 14.7 percent in 1993. The rise was 16.1 percent for urban residents and 13.7 percent for rural residents. However, the increase for the 35 large and medium-sized cities was even higher, 19.6 percent, as prices for grain gained 27.7 percent, edible vegetable oils 16.2 percent, fuel 35 percent, and services 38.6 percent. In rural areas, the retail prices for agricultural capital goods rose 14.1 percent. Some of the price increases can be attributed to the better quality of goods and services purchased from open markets.

China's official customs statistics for 1993 indicate the total merchandise trade balance was an approximately \$12.2 billion deficit, after 3 consecutive years of trade surpluses. This is because the value of 1993 exports rose only 8 percent, while total imports shot up 29 percent (table 3). The increased imports can be attributed to the economy's high growth rate, large-scale investment, and a shortage of primary products caused by rising domestic demand. Major increased imports were machinery, transportation equipment, and raw and semi-finished materials, particularly steel products. These imported items were in great demand due to the construction boom and rapid growth of infrastructure development in 1993.

Noticeably, China also imported much more crude oil and refined petroleum products, implying possible future oil shortages and a growing deficit in energy resources. The balance of agricultural trade, however, not only remained surplus but also expanded to a record \$8.1 billion (table 3). The larger agricultural trade surplus resulted from an 11-percent decline in agricultural imports and a moderate 4-percent growth in agricultural exports. In 1993, China decreased grain imports, particularly wheat, after 3 consecutive years of bumper harvests.

In 1993, China was able to score significant increases in foreign capital to assist sustained economic growth. The government signed new agreements with foreign investors for \$122.7 billion, an increase of 77 percent over the previous year. Actual foreign capital used during 1993 amounted to \$36.77 billion, up 92 percent from the previous year. Foreign exchange income from tourism also continued to rise, totaling \$4.7 billion, up 19 percent. Despite the sharply increased foreign investment and nontrade incomes, China's foreign exchange reserves were up only 9 percent over the previous year because of the trade deficit (table 3).

### Macroeconomic Outlook in 1994

China's annual economic growth rates over the last 3 years (8.2 percent in 1991, 13.6 percent in 1992 and 13.4 percent in 1993) averaged much higher than the 6 percent targeted in the original eighth 5-year plan (1991-95), but also significantly higher than the adjusted real GDP growth rate of 8-9 percent as officially announced by the government in early 1993. In 1994, according to an SSB report, GDP grew at the real rate of 11.6 percent in the first half of the year. This slight drop in economic growth is desired by the government to free its hands from fighting economic overheating and to focus instead on deepening reforms.

China's general retail price index for the first 6 months of 1994 dropped to 19.8 percent, down slightly from the first quarter, because of slowing economic growth after the government's tightening of credit. Despite this, double-digit-inflation will remain for the entire year, the real GDP growth rate for 1994 is also expected to register at double digits (higher than the 10-percent plan target), assuming no major shifts in current government economic and political policies. According to a State Planning Commission report, the secondary industry is expected to grow 10 to 11 percent, with an industrial growth rate of 17 to 20 percent. The agricultural sector will rise around 4 percent with a slight decline in grain and oilseed crops, higher cotton production, and an increase in livestock output.

According to China's SSB, the overall economy grew 12.6 percent for the first quarter. Although the added value of industry grew 16 percent to 533 billion yuan for the first quarter, state-owned enterprises registered a production growth of 2.2 percent (some 49.6 percent of enterprises suf-

Table 3--China's foreign trade indicators, 1990-93 /1

Item	1990	1991	1992	1993
US \$ billion				
Exports:				
Total	62.06	71.91	85.00	91.76
Agriculture	9.77	10.55	15.26	15.87
Agri. share (%)	15.70	14.70	17.90	17.30
Imports:				
Total	53.35	63.79	80.60	103.95
Agriculture	5.47	6.07	8.65	7.73
Agri. share (%)	10.30	9.50	10.70	7.40
Balance:				
Total	8.71	8.12	4.40	-12.19
Agriculture	4.30	4.48	6.61	8.14
Foreign exchange reserves	11.09	21.71	19.44	21.20
Avg. exchange rate	4.78	5.32	5.52	5.76

/1 Trade data is calendar year and on an f.o.b. basis.

Sources: China's Customs Statistics, IMF Statistics, and 1994 China Statistical Summary.



### **Modest Growth for the Agricultural Economy in 1994**

In 1993 and 1994 China's leaders instituted major changes in marketing agricultural commodities and inputs. These policy changes altered the mix of crops produced in 1993, and for 1994 the new policies will focus the attention of all participants in the rural economy on prices, costs, benefits, profits, and quality of products. During this transition the rural economy likely will grow more slowly as participants in the new system adjust production, marketing, processing, stock, and consumption activities.

China's agricultural economy likely will grow slower in 1994 than the 4 percent for 1993. China's authorities project that grain output will decrease 1 percent to 450 million tons from the record 456-million-ton 1993 crop. Area sown to grain crops likely will decline because some cultivated land will go to urban construction and new roads, and farmers will shift to more profitable vegetable and fruit crops and allow some fields to lie fallow. Oilseed production for 1994 is projected to drop more than 10 percent to 16 million tons, well below the 18-million-ton crop for 1993. The State Planning Commission target is 17.65 million tons of oilseeds. The cotton crop for 1994 is projected at 4.36 million tons, up from the 3.75-million-ton crop for 1993. The state cotton plan target is 4.85 million tons. Sugar output for 1993 is forecast at 6.8 million tons.

Meat output for 1994 likely will expand from the 39 million tons in 1993. Rising incomes will create strong demand again in 1994. Producers will be able to boost output because of ample feed supplies from the excellent 1993 grain and oilseed crops.

The agricultural sector generates only 20 percent of China's gross domestic product while heavy and light industry account for 63 percent. Agriculture used to generate most of the value of output from the rural economy. But since 1980, rural industrial output increased dramatically so that agriculture now only accounts for 43 percent of total output of the rural economy.

China divides its agricultural economy into five sectors: crops, animal husbandry, fisheries, forestry, and other production such as collecting medicinal plants, trapping animals, and small-scale handicraft manufacture. Output from animal husbandry and fisheries rose dramatically in the last decade and now accounts for about 35 percent of the strictly agricultural economy. Crop cultivation's share of the agricultural economy decreased steadily from 72 percent in 1980 to 69 percent of the total in 1993.

In 1993, grain crops accounted for 75 percent of total sown area, of which wheat, rice, and corn represent 55 percent. Cotton, oilseeds, sugar crops, and tobacco accounted for 14 percent of sown area, with fruits, vegetables, and forage crops accounting for the remaining 11 percent.

[Frederick W. Crook]

ferred losses totaling 15.7 billion yuan). In contrast, village and township enterprises grew 50 percent and foreign-funded enterprises 90 percent (7). Although state industry has witnessed changes since the second quarter of this year, it is still impeding economic advancement and reform. At the end of June 1994, China's industrial growth fell to 15.8 percent. There were still 46.3 percent of industrial enterprises under the state budget oozing red ink. The SSB report indicated that, by the end of June, debt defaults among enterprises reached 360.4 billion yuan, 158.4 billion more than the same time last year. By the end of May, about 364.4 billion yuan worth of products were stacked in warehouses. The growing stockpiles were freezing up working capital. In 1994, the government increased loans for working capital to state-owned enterprises. Priority, however, will be given to those with good economic performance, followed by those in a position to turn red into black in a relatively short time. Enterprises in debt and with no hope of recovery will be declared bankrupt in line with the bankruptcy law.

State investment in fixed assets will total 1,300 billion yuan in 1994, an increase of 10 percent over 1993. The investment this year has been characterized by reducing local projects and increasing central projects, strengthening infrastructure development such as transportation and communication, and assisting housing projects aimed at improving basic housing conditions. Total state investment for state owned units for 1994 will be 875 billion yuan, and for collectives and individuals, 425 billion yuan. China's revenue in the first half year of 1994 increased by 22.6 percent over that of 1993, while expenditure was up 27 percent. It is expected that China's 1994 budget deficit may reach, or even exceed, 67 billion yuan.

The volume of retail sales in the first half year totaled 718.7 billion yuan, increasing a real rate of 25 percent over the same period last year. Total retail sales of consumer goods are expected to reach 1,600 billion yuan, including 150 billion yuan for retail sales of agricultural production inputs. In the first six-month period, the average real income of urban and rural residents rose by 9.4 and 13.3 percent, respectively, over the same period last year.

Nationwide inflation averaged 20 percent for the first half year, with the highest rate of 23.2 percent in February this year. More importantly, price increases eased somewhat since March, mainly through the rigid control of market prices by central and local governments. Although inflation is still high with a two-digit rate, Chinese people are reluctant to open their purse in the market and choose instead to keep their money in the bank, a major difference from the panic buying spree in 1988. Therefore, the likelihood of a return to the high inflation of 1988 is small. According to recent reports on the current market situation, there is a balance in supply and demand for most goods and prices are unlikely to rise sharply even with money supply declining to 20 percent by the end of June.

China's overall trade will continue to expand in 1994. With the two-tier exchange rates (official and swap market rates) unified this year, depreciating the Chinese yuan over 33 percent, and the continuing trade system reform in order to join



GATT, China's exports should rise over \$100 billion while import growth slows. For the first 7 months of 1994, the value of exports totaled \$58.7 billion, an increase of 31 percent over the same period last year, and imports rose by 19 percent to \$58.8 billion, with a deficit of \$100 million. Nevertheless, China's yuan is likely to continue depreciating throughout the year, because of the continued trade deficit, high inflation rate, and need for foreign exchange to repay the increasing foreign debts in 1995.

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## China Runs Agricultural Trade Surplus With the United States

*U.S. agricultural exports to China are expected to increase in 1994 because of higher cotton sales. The 1993 deficit in U.S. agricultural trade with China will be reversed. In 1993, U.S. agricultural exports to China decreased significantly, while those from China continued to rise, resulting in the first U.S. agricultural trade deficit since 1986, about \$75 million. China's 1993 agricultural trade (exports and imports) dropped to \$23.6 billion, a 1.3 percent decrease from the previous year. After 2 years of rapid growth, China's exports of corn rose more moderately from 10.6 million tons in 1992 to 11.1 million in 1993. Imports of wheat declined sharply from 10.6 million tons in 1992 to 6.4 million in 1993, accounting for 11 percent of the drop in China's 1993 agricultural imports. [Francis C. Tuan]*

China's total agricultural trade (imports and exports) declined marginally from a record \$23.9 billion in 1992 to \$23.6 billion in 1993. The decline was mainly due to an 11 percent drop in China's agricultural imports. In 1993, imports of wheat decreased 39.2 percent to 6.4 million tons, close to the record-low wheat imports of 5.3 million tons in 1986. The sharp decline in imports of sugar and cotton also contributed to the reduction in total agricultural imports. China's 1993 agricultural exports expanded at a moderate rate, about 4

percent, and reached a record \$15.9 billion in 1993. Increased rice, meat, edible oil, and fresh vegetable exports accounted for most of the export expansion.

### **U.S. Agricultural Trade Deficit Will Be Reversed in 1994**

In 1993, the U.S. merchandise trade deficit with China continued to grow, reaching \$22.8 billion, 25 percent over the previous year, and close to 120 percent above 1990. Further-



more, for the first time since 1986, agricultural trade between the United States and China was in favor of China. U.S. agricultural exports to China declined for the fourth consecutive year, about 31 percent to \$376 million, while agricultural imports from China continued to rise, by 19 percent to \$451 million (appendix tables 9 and 11).

U.S. cotton exports to China in 1993 fell to 179 tons from the 133,500 metric tons the previous year. The reduced cotton exports were basically responsible for the decline in the value of U.S. agricultural exports to China. In fact, China's cotton production in 1992 and 1993 dropped sharply from the 1991 output because of bollworm infestations, particularly in Shandong, Hebei, and Henan. However, high stocks and success in reducing natural fiber use in yarn and textile manufacturing allowed the country to reduce cotton imports to below 10,000 tons, compared with 280,000 tons imported in 1992. Consequently, the value of U.S. cotton exports to China decreased to less than \$200,000 in 1993, substantially lower than the \$186 million in 1992. However, China began to buy U.S. cotton in the first quarter of 1994 because of a domestic cotton shortage for textile use and the questionable quality of the remaining stocks. Cotton prices are high in the world market and how much cotton China will buy from foreign sources remains to be seen.

U.S. wheat exports to China declined only slightly, from 3.0 million tons in 1992 to 2.7 million in 1993, despite the 40 percent decline in China's overall wheat imports. The United States was successful in maintaining exports, in value terms, and increasing share because of higher wheat prices. Wheat export value rose nearly 2 percent to \$278 million in 1993. Wheat has always been a leading U.S. agricultural commodity to China, accounting for 74 percent of total value in 1993. U.S. 1994 wheat exports to China are forecast to remain near 1993 because China has reaped bumper grain harvests for 4 consecutive years and has large grain stocks.

The value of U.S. agricultural imports from China has continued to grow steadily over the last two decades. Imports from China have increased an average of 12 percent annually since 1983 and the pace has accelerated to almost 19 percent during the 1990's. The 1993 value reached a record \$451 million, 19 percent over the previous year (appendix table 11). Increased imports of vegetables (fresh and frozen), including prepared and preserved garlic; tobacco; and cocoa and cocoa products contributed to a large part of the growth, particularly vegetables and vegetable preparations. The increases enabled China to become the fourth largest source of vegetable imports for the U.S. (see feature article, "Vegetable Production and Marketing in China").

In 1993, China exported 24,000 tons of fresh garlic to the United States, compared with 3,000 tons the previous year (3). China captured 42 percent of U.S. garlic imports in 1993. The same market share was only 11 percent in 1992 and less than 3 percent in each of the preceding 8 years. U.S. garlic growers last year charged that the domestic price of garlic had fallen because of the unfairly low price of imports from Chinese competitors. In February 1994, growers filed a petition with the U.S. Department of Commerce seeking anti-dumping duties (3). The Commission is waiting for the Chi-

nese to respond by the deadline of July 11, 1994. The Department of Commerce will then decide later in the year if the imposition of anti-dumping duties is necessary after the International Trade Commission determines the extent of damage.

Items such as tea, spices, essential oils, feathers and down, canned mushrooms and water chestnuts remain major imports from China (appendix table 11). U.S. agricultural imports from China in 1994 are expected to surpass \$500 million.

### ***China's Grain Exports Remain Strong in 1994***

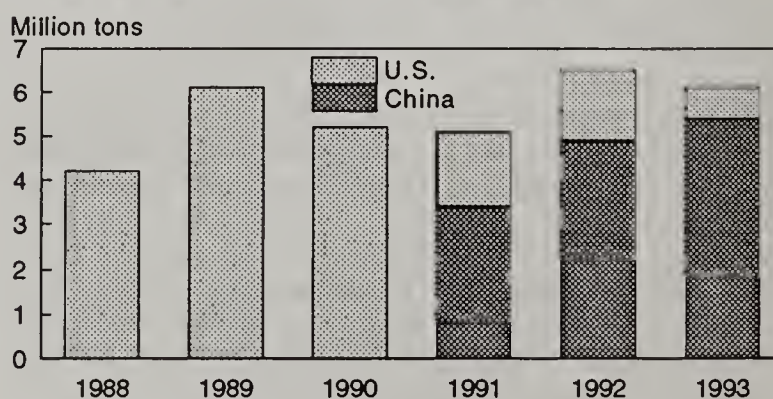
In 1993, China's agricultural export value grew 4 percent to a record \$15.87 billion. This, coupled with reduced agricultural imports, boosted the country's agricultural trade surplus to over \$8 billion, substantially reducing China's 1993 merchandise trade deficit to \$12 billion (appendix tables 6 and 8).

The increased exports in 1993, came primarily from larger cereal, tobacco, and cigarette sales. Nevertheless, exports of items such as fresh vegetables, frozen chicken, and fruits (particularly fresh apples) also rose significantly from the preceding year (appendix table 5). China's 4 consecutive years of bumper grain harvests continue to facilitate cereal exports, particularly corn and rice, to Asian markets. In calendar year 1993, according to China's customs statistics, corn exports topped 11.1 million tons and rice exports increased to 1.4 million tons, contributing nearly 9 percent to the agricultural export value of \$15.87 billion. Corn and rice exports were only 3.4 million and 330,000 tons, respectively, in 1990.

China mainly sold corn to South Korea, Japan, and the Former Soviet Union. China continued to displace U.S. sales to the South Korean corn market (fig. 1). Recent reports from South Korea, however, revealed that China's corn quality is questionable, with moisture content up to 17 percent and even 18 and 19 percent. South Korean specifications call for a maximum moisture content of 14.5 percent. Consequently, Korean traders have recently reduced tenders of Chinese corn, particularly from China's Northeastern Region.

In 1993, values of several exported items such as fresh or frozen prawns, soybeans and bean cakes, raw silk, and rabbit hair declined significantly. Declining exports of tobacco were offset by more cigarette sales, up 66 percent from the previous year to \$485 million.

Figure 1  
**China Displaced U.S. Corn in Korean Markets**





China's 1994 agricultural exports are expected to rise at a slower pace because of a slowdown in bulk commodity exports. Increased exports are expected for processed food, and vegetables and fruits, both fresh and dried.

### **Grain Imports To Remain Low in 1994**

In 1994, agricultural imports are expected to remain the same or slightly above last year's level. Imports of traditional farm commodities will continue, but 1994 grain imports, mainly wheat, will rise but remain low because of a record grain crop in 1993 and unusually high domestic stocks. However, imports of raw cotton are expected to increase due to 2 years of serious insect infestations. In the long run, China will likely import more bulk commodities, including wheat, cotton, and oilseeds, because of limited supplies due to less arable land and growing demand, induced by rapid economic development and population growth.

China's 1993 agricultural imports were \$7.7 billion, down 11 percent from the previous year. Major imported commodities included wheat, wool, fish meal, and vegetable oils. Values of these imported items declined in 1993, with wheat and fish meal dropping most sharply at 44.5 and 41.4 percent. In 1993, the quantity of imported wheat was 6.4 million tons, down from the previous year's 10.6 million. Despite smaller imports, wheat still remains the single largest imported item and accounted for 11 percent of China's agricultural import value in 1993.

The quantity of fish meal imported in 1993 dropped to 431,000 tons, 32.4 percent lower than the previous year. The reduction may imply that China began to substitute relatively cheaper soybean meals for fish meal in formula feed.

China's edible oil imports declined from 420,000 tons in 1992 to 240,000 tons in 1993, after 3 consecutive years of improved oilseed harvests. Palm oil imports continued to decline in 1993, but long-term demand for edible oils, particularly cheaper palm oil, should increase because of the current low edible-oil consumption compared with neighboring countries such as South Korea, Japan, Hong Kong, and Taiwan.

The quantity of wool imported to China increased to 237,000 tons, almost 15 percent over the previous year. However, because of lower unit prices, China's wool imports were valued at \$701 million, down 9.4 percent from 1992. The prices of wool came down because Australia and New Zealand eliminated their price support programs in 1992.

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## **China's Input Delivery System in Transition**

*In 1993, supplies of chemical fertilizer and electricity rose but pesticides and large-tractor production decreased. Energy, labor, and raw material costs rose faster than agricultural commodity prices in the first half of 1994, squeezing farmers' profit margins and limiting their input purchases. While government authorities allow market forces to bring China's input manufacturing enterprises closer to world market conditions, they also have tried various schemes to slow domestic input price increases. [Frederick W. Crook]*

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### **Unsettled Input Picture for 1994**

Major changes are underway in the delivery of agricultural inputs. During 1993 and early 1994 policy debates were touched off by the rise in input prices: Should prices be liberalized or should they be brought back under unified state control? If support is given to farmers, how should it be accomplished?

Authorities in China attributed the rise in input prices to many factors. Some said that the adoption of the unified exchange

rate tended to raise the price of imported inputs. Some noted that reforms initiated to lift government price controls on key industrial inputs such as steel, crude oil, and electricity led to price increases for agricultural inputs. Others thought that the remnants of old monopolies invigorated in a new economic environment were using economic power to boost prices.

Prescriptions on how to handle the rise in input prices ranged from allowing open markets to re-establishing state-controlled prices. Some authorities suggested that the government



should hold stocks of inputs to stabilize input prices. Authorities urged large producers of farm inputs to sell directly either to farmers or to local supply and marketing cooperatives to reduce price gouging of middlemen.

The State Council reduced tariffs on some inputs, such as chemical fertilizer, from 5 to 4 percent, and continued to support small- and medium-sized manufacturing firms by subsidizing transportation and electricity charges. In spring 1994, the State Council also ordered price inspectors to monitor prices, make sure goods for sale had appropriate price tags, and see that shoddy and harmful products were not marketed. The State Council allowed the price of crude oil to rise, but the price of diesel fuel was fixed until the end of June 1994.

During 1993, most provinces ended government-fixed quota purchases of grains and oilseeds and terminated the system of supplying fixed quantities of chemical fertilizers, diesel fuel, and pesticides at low state-fixed prices for commodities tied to the government grain procurement system. A survey of reports from provinces, however, suggests that a single unified nationwide input policy has not been implemented. Provinces are experimenting with different methods to ensure that input supplies are delivered to farms.

Some provinces paid cash subsidies to those farmers selling grain and oilseeds according to government contracts. For example, for each 100 kilograms of cotton farmers sold to government-owned procurement centers, Sichuan and Liaoning province were prepared to pay a cash amount that was equal to the difference between the fixed prices for diesel fuel and chemical fertilizer and market prices for these products (9,12). In Hebei province, authorities raised grain prices on April 1, 1994, and switched from using the fixed-quota purchase system to the negotiated-price system for grains and oilseeds, and implemented the protection price program. In Xinjiang province authorities plan to relax government controls for most agricultural commodities except cotton. They plan to raise the purchase price for agricultural commodities but also link the supply of inputs to output.

Farmers are selling an increasing portion of agricultural commodities on the market. For example, in 1978, 92.6 percent of goods sold off farms were sold to the government, but by 1992 this ratio fell to 23 percent (4). When the government was practically the only buyer it had considerable influence on input supplies, but now that its marketing share dropped it has less influence.

Currently, in China's rural economy hundreds of millions of small individual farm households have a large share of off-farm sales in open free markets. At the same time, these relatively unorganized individual producers have to purchase their inputs and consumer goods from much larger, better organized enterprises that, in many cases, originated as government monopolies. With continued economic reforms, the government has lifted price controls on some key industrial inputs and prices have risen. Some firms also have taken advantage of their monopoly-like powers to raise prices. Farm profit margins have been squeezed as farm production prices have remained steady or have fallen compared with the rising prices of consumer goods and farm input prices (4).

In 1993, farm supplies of manufactured inputs, such as chemical fertilizer, small tractors and farm trucks, as well as rural electrical power consumption, rose, but supplies of pesticides and large tractors decreased. During 1993, authorities relaxed prices on a number of industrial commodities such as steel and crude oil which had formerly been strictly rationed and controlled. This action led to price increases for many agricultural inputs, and as prices rose, farmer demand for these products fell. As stocks built up in warehouses, input manufacturers began to reduce their output.

China's Customs Administration reported imports of 10.2 million tons (product weight) of chemical fertilizers in 1993, down 45 percent from 1992. Urea fertilizer imports decreased by 52 percent while imports of compound fertilizers dropped to 3.6 million tons, a decrease of 45 percent.

### ***Fertilizer Production and Use Down for 1994***

Fertilizer production and use for 1994 likely will grow slowly because energy, labor, and raw material costs will be higher and farmers' profit margins will be reduced. In 1993, fertilizer production was down slightly (table 4). The state fixed price of urea rose from 538 RMB per ton before October 1, 1992, to 660 RMB after that date. By March 1993, the price rose again to 1,000 RMB and another 11 percent by May 1994. The rapid rise in fertilizer prices during the last half of 1993 dampened prospects for fertilizer use in 1994 even though grain prices in the last quarter of 1993 rose in some provinces. Fertilizer prices rose much faster than grain prices so that fertilizer sales in the first half of 1994 have been below the previous year. Retail market prices for urea fluctuated even more radically than state prices. Areas with healthy financial reserves are attempting to build up strategic fertilizer reserves to dampen fluctuations in prices.

In the past few years, China chemical fertilizer use on a product weight basis has been 120 to 130 million tons. About 105 million tons, or 87.5 percent of total supply, was produced domestically and 15 million tons or 12.5 percent was imported (8). China's Customs Administration reported imports of 10.2 million tons (product weight) of chemical fertilizers in 1993, down 45 percent from 1992. Urea fertilizer imports decreased by 52 percent while imports of compound fertilizers dropped to 3.6 million tons, a decrease of 45 percent.

The State Council set the domestic chemical fertilizer production target for the end of the eighth 5-Year Plan (1991-1995) at 125 million tons. Authorities plan to expand capacity by 20 million metric tons in the next 2 years. That target is to be composed of 92.2 million tons of nitrogen fertilizer, 32.3 million tons of phosphorous fertilizers, and 420,000 tons of potassium fertilizers (5). Here we have an interesting insight into some elements of current economic policy making. On the one hand, we see evidence that state planners have been active in setting physical output targets for chemical fertilizer production. Yet on the other hand, we see that market forces have created conditions in which fertilizer plants have over capacity--they can produce more fertilizers than farmers are willing to purchase at current market prices.

In August 1993, the State Council adopted "China's Agricultural Development Program for the 1990's." By the year



2000, investments will be made to expand chemical fertilizer capacity to produce 150 million tons. Specifically, the government plans to transform small chemical fertilizer plants and introduce new kinds of fertilizers (10).

### Domestic Pesticide Production Down

Domestic pesticide production in 1993 decreased to 249,000 tons, down 12.3 percent from 1992. Demand and, subsequently, output fell because rising input costs pushed pesticide prices above what many farmers were willing to pay given slowly rising agricultural product prices. Stocks built up and producers reduced output.

Usually output and use data of various kinds of chemical pesticides are aggregated together, but recently published documents reveal several facets of China's pesticide use. In 1991, the aggregate domestically manufactured pesticide output was composed of 77.5 percent insecticides, 13.8 percent fungicides, and 7.9 percent herbicides (11). Total supply of pesticides from domestic production and imports rose from 104,000 tons in 1960 to a peak of 618,000 tons in 1979 (figure 2). High pesticide use in this period was dictated by commune agricultural technology specialists who had abundant supplies at relatively low prices. Under the economic reforms, farmers applied pesticides on a benefit cost basis, and use dropped sharply so that supply in 1987 was only 171,000 tons. Since

then farmers have sought more effective pesticides which are less dangerous to use and are more environmentally sound.

Since economic reforms began in 1979, about 10 percent of pesticide supplies have come from imports. Over the past 7 years (a period in which there is PRC trade data), insecticides accounted for 59 percent of total imports; herbicides, 33 percent; fungicides, 7 percent; and disinfectants and rodenticides, 1 percent. In 1992, China imported \$203 million worth of pesticides, mostly insecticides and herbicides, of which the United States accounted for \$44 million (2).

### Slow Growth for Farm Machinery Sales in 1994

Farm machinery sales slumped 30 to 40 percent in the last half of 1993. While grain prices rose in the last quarter of the year, machinery prices rose even faster. For example, from January 1993 to January 1994, prices of tractors and equipment rose 20 percent while the price of diesel fuel and gasoline rose 80 percent.

Government authorities lifted price controls on a number of key industrial commodities, which resulted in rising prices for farm machinery. In 1993, China's leaders told firms that, with the upcoming accession to the GATT, no special protection would be granted to enterprises in the farm machinery sector. But recently, the government implemented a new consumption tax measure. Some salesmen took advantage of the new measure to raise farm machinery prices. To prevent further such fraudulent practices the China Tax Administration issued a ruling stating that the new consumption tax would not apply to farm machinery sales (3).

Large tractor production fell from 57,000 in 1992 to 37,000 in 1993 and output of small tractors decreased from 1,391,000 in 1992 to 866,000 in 1993 (table 4). But aggregate motive power for farm machinery in 1993 rose to 318 billion kwh, an increase of 4.8 percent. Yet the machine-plowed area estimated at 51.4 million hectares remained unchanged from 1991. There are several reasons for this phenomenon. First, many farmers purchased tractors not to plow their fields but to earn cash by hauling freight and passengers on short local hauls. Second, with the rapid rise in diesel fuel prices, farmers tended to use their tractors less and only when they could make a good profit.

During the 15 years after reforms were initiated (1979-1993) China's farm machinery development can be summarized as

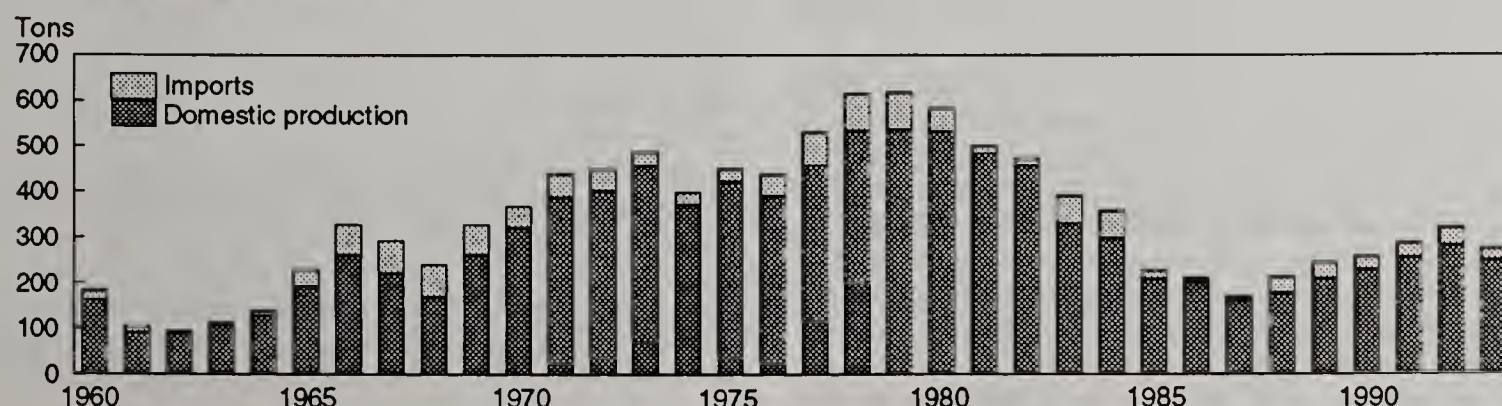
Table 4--China's major manufactured farm inputs, 1990-93

Item	Unit	1991	1992	1993
Yearend stocks:				
Lrg-med tractors /1	1,000	784	758	720
Hand tractors	1,000	7,304	7,423	7,840
Rural trucks	1,000	617	654	680
Machinery production:				
Lrg-med tractors /2	1,000	52	57	37
Hand tractors	1,000	1,348	1,391	866
Rural electricity consumption /3	Mil. Kwh	96,320	110,069	121,940
Fertilizer output /4	Th. tons	19,795	20,479	20,160
Nitrogen /4	Th. tons	15,101	15,705	15,467
Phosphate /4	Th. tons	4,597	4,622	4,514
Potassium /5	Th. tons	97	152	179
Fertilizer applied	Th. tons	28,051	29,302	31,501
Chemical pesticides	Th. tons	255	281	249
Plastic sheeting	Th. tons	406	na	na

/1 Large/medium tractors of 14.7 kW capacity or more.  
 /2 Wheeled/crawling tractor of 14.7 kW capacity or more.  
 /3 Not all for agricultural production. /4 Effective nutrient weight. /5 Derived.

Sources: 1993 Statistical Yearbook; 1994 Statistics Abstract; and China's Customs Statistics, No. 1, 1994.

Figure 2  
China's Pesticide Supply, 1960-93





follows. The quantity of motive power on farms increased 1.6 times. The number of tractors owned by farm households rose 3.4 times and the number of farm-use trucks expanded 8.5 times. Even with this rapid expansion during the reform period, most of China's farm operations continue to be accomplished with hand labor. For example, in 1991 (the latest year for which there is this kind of data), 34 percent of the sown area was plowed by tractors, 17 percent was machine sown, and only 8 percent was machine harvested.

The State Council's "Agricultural Development Program for the 1990's" notes that by the year 2000, authorities expect farm machinery enterprises will be able to annually produce 200,000 large tractors, 500,000 small tractors, 10,000 combines, and internal combustion engines with a total of 80 million horsepower.

### **Slow Development of Land Markets**

Most farmland in China is collectively owned by rural resident groups (*cunminzu*), which are remnants of the old production teams in the now demobilized commune system. Most farmers signed 15-year land contracts with the resident groups (townships, villages, economic cooperatives) from 1980 to 1984. This means that contract periods will end in 1995 and 1999, and land use issues should soon begin to surface in policy debates. Ideologically, it will be difficult for the Party to change the system. If they allow private ownership of the means of production, there will be little left of the rural socialist market economy. On the other hand, the land contract tenure system has limited capacity to boost output and currently has some powerful effects on China's agricultural economy.

Prior to 1949, China's farmers and financial institutions valued land as an asset which could be bought and sold. By the mid-1950's, land could not be bought and sold and, likewise, could not serve as collateral for loans. The change in the status of land in patriarchal China, the restrictions on rural investment, and the fact that farmers are not covered by China's social security systems have important effects on China's rural economy.

The life cycle of saving provides important insights into China's rural economy. In the 1920's and 1930's farm families built up assets through time, and then during old age assets were liquidated to cover living expenses when they were too old to manage the farm enterprise. Central to this life cycle of savings was the ability of farmers to buy and sell farm assets such as land and to participate in financial markets. In the pre-1949 period, a farmer wanted assets of 3,000 RMB, or 300 RMB per year for 10 years, by age 55.

In the commune period (1958-84), the government closed land markets and farmers faced a major problem building up sources of savings during their working lives. Commune members could build up financial deposits in rural credit cooperatives and could accumulate furniture and durable household goods like TV's, fans, and clocks. But because land and equipment was collectively owned, these assets were not part of a farm worker's asset portfolio and were not sufficient to cover current living expenses. At the same time, farm families had to deal with two other government policies:

the government did not provide social security payments to the rural population and the government put strong pressure on farm families to reduce the population growth rate. Parents responded to this situation by taking extreme measures to bear sons who would take care of them when they became feeble.

After economic reforms were initiated in the early 1980's, farm families had more avenues to build up their savings. In making investments, they had to balance risk and rates of return. While farmers still could not own the land they farmed, they could to some degree capitalize on their land use rights. But in deciding to invest funds in the land they cultivated, the risks outweighed the expected returns. Farmers felt it was too risky to invest in their land because the Party might change its policies in a few years, and they might not be able to contract the same land they had invested in. Rather, farmers invested in rural stock companies which supported rural industrial enterprises--less risk and higher rates of return compared with returns from land. Farmers also heavily invested in their own housing--low risk but high in consumer value. Farmers did invest in certain agricultural operations which had high expected rates of return, such as livestock, vegetable, fish ponds, and fruit production. Farm families also were permitted to invest in farm equipment such as small tractors and hand tools.

However, these increases were not enough to reduce the pressure on families to bear sons. China's leaders could reduce the natural population-increase rate somewhat if they extended the social security system to the rural population--a very expensive proposition--or change the land ownership policy so that farmers could invest in the land and increase asset values.

The current land tenure system also impacts the rural financial system. Farmers need operating and long-term loans to continue current output and expand production capacity. But since they do not own the land they cultivate, farmers have difficulties obtaining loans because they cannot use their land as collateral with the bank.

Moreover the land tenure system impedes moving surplus rural workers from crop cultivation to non-farm employment. In the early 1980's, land contracts were made with each household. In time, some rural households wanted to change occupations, leave the raising of crops and begin new economic endeavors. While the land contract system could be administered to allow the transfer of land use rights from those who wanted to farm to those who wanted to leave, in many areas cadres rigidly administered the system so that it became a barrier to the movement of surplus rural workers off the farm.

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## Grain Production for 1994 Projected at 450 Million Tons

*China's officials project that grain production will reach 450 million tons in 1994, down slightly from the record 456-million-ton crop in 1993. In 1994, China likely will be a net exporter of rice and corn, but wheat imports are expected to rise slightly to 7 million tons for July-June 1994/95. Major grain reform policies implemented in 1993 and 1994 will focus the attention of grain economy participants on prices, costs, benefits, profits, and quality of products. Even with these major policy reforms, the government will continue to intervene in the grain economy. [Frederick Crook]*

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Area sown to grain for 1994 is projected to fall by about 250,000 hectares (ha), down 0.2 percent to 110.3 million, in spite of government and party campaigns to maintain land in production. Agricultural specialists met in spring 1994 to assess the rural sector's performance in 1993 and to make plans for 1994. Ministry of Agriculture officials who attended that meeting reported that area sown to grains in 1994 could well be down more than 1 million hectares.

The record crop in 1993, very good crops in 1991 and 1992, and large stocks depressed grain prices in early 1993. But toward the end of 1993, grain prices in many areas rose. At the same time, input prices escalated faster than agricultural commodity prices, squeezing farmers' profit margins. USDA projects a total grain crop of 445 to 455 million tons for 1994. At the beginning of the year, China's authorities announced the 1994 grain production target of 450 million tons. Because farmers had a record grain crop in 1993, China will likely be a net grain exporter again in 1994.

### **Grain and Edible Oilseed Marketing Reforms in 1993-94 Have Big Impact on Agricultural Economy**

On April 1, 1993, authorities implemented a national grain price deregulation policy. The planned supply system instituted in the mid-1950's, which guaranteed urban residents grain and edible oil rations, was abandoned in most places. After April, sales volumes in government owned grain stores dropped dramatically. Competition from open markets forced many of these stores to radically change their business methods and services offered. Grain stores have been hampered financially because some hold low-quality grain stocks. The grain is difficult to sell, which means that there are less financial resources to purchase fresher, higher-quality grains that will sell well in the market place. Instead of queuing up at the local government-owned grain store with their grain ration book in hand, most urban families purchased their food grain and edible oil from local markets at negotiated prices.



Table 5--China's grain production, trade, and stocks

Indicator	1992/93	1993/94	1994/95*
Million tons			
Total grain (Jan/Dec) /1			
Production	442.70	456.00	450.00
Imports	7.40	5.66	8.40
Exports	14.40	14.95	14.05
Stocks	78.00	75.13	62.69
Wheat (Jul/Jun)			
Production	101.59	106.39	103.00
Imports	6.72	4.50	7.00
Export	0.00	0.15	0.15
Stocks	22.85	22.74	20.59
Rice (Jan/Dec)			
Production (paddy)	186.21	177.70	173.57
Imports (milled) /2	0.11	0.40	0.30
Exports (milled)	1.37	1.50	1.20
Stocks (milled)	29.60	24.89	18.49
Corn (Oct/Sep)			
Production	95.38	102.70	104.00
Imports	0.00	0.00	0.00
Exports	12.62	12.00	12.00
Stocks	27.00	26.00	23.00

\* Forecasts. /1 Wheat, rice (paddy basis), coarse grain, soybeans, potatoes (grain-equivalent using a 1:5 ratio of grain to raw weight), pulses and other grains included in total grain. /2 For the 1993/94 rice marketing year, trade data is for calendar 1994.

Source: USDA.

The planned purchase system was also initiated in the mid-1950's when the government-owned Grain Bureau (*liang shi ju*) became the government's sole purchaser of grains and oilseeds. The April 1 decree regarding purchases was not uniformly implemented throughout the country. In some counties farmers who had signed grain purchase contracts with grain stations still had to deliver the specified grain to the storage bins and were paid market prices. For surplus grain above the obligated quota some individual grain dealers drove their wagons and trucks directly to farmers' fields to purchase the grain (10). In some counties government-owned grain stations competed to purchase farmer's above-quota grain with supply and marketing cooperatives; farm machinery companies; transport firms; seed companies; flour, rice, and feed mills; breweries; and vermicelli factories.

In other counties farmers were initially told to deliver only half of the quantity specified in their purchase contracts. But as the year wore on, grain bureau officials panicked thinking that not enough grain would be sold to the government, so officials reneged on the promise, and forced farmers to deliver the full amount. During the year there was only a small difference between the quota price and the market price, but as the year wore on the market price rose, creating a two-tier price system--something the reform was intended to eliminate.

In other counties officials continued to press farmers to deliver the quantities specified in the contracts to the grain stations. But Grain Bureau officials used market prices to purchase the quota grain.

In late 1993 officials worried that incentives were insufficient for farmers to boost grain output and that urban incomes were continuing to rise faster than rural incomes. After important Communist Party meetings in October 1993, substantial increases in government grain and oilseed purchase prices were announced. Currently a complete list of government purchase prices for the various grains and oilseeds for the provinces is

not available. But an indication of the magnitude of the price increases can be had by looking at changes in Liaoning province. There the government purchase price for fixed quota corn rose from 440 RMB per ton to 700 RMB, an increase of 59 percent, and the purchase price for paddy rice rose from 600 RMB per ton to 900 RMB, an increase of 50 percent (4a).

On June 28, 1994, the State Council issued a directive to improve the management of grain and edible oilseed markets. The directive contains only six points (see box) that are difficult to understand. The directive has contradictory goals: the new policies should "improve the administration of the [free] grain markets so as to keep it [prices] stable." (4) In the next few months China's leaders likely will fill in the details. In the meantime one can only hazard a few preliminary comments.

### What Prompted the Directive?

Evidently government and party leaders worried that disbanding the old planned purchase and planned supply system to rely on the forces of demand and supply in open markets would lead to disruption in grain supplies and increases in prices. On the one hand, authorities wanted grain prices to rise to stimulate farmers to continue producing grain. At the same time authorities wanted to insure stable supplies for urban workers, the military, and civil servants. They also wanted stable prices to protect the economic well being of their prime political constituents--the urban proletariat. In choosing between these two objectives, authorities opted to support their urban constituents. This decision is not unusual because since the early 1950's they have consistently chosen policies that support urbanites--authorities do not want urban unrest similar to that of Tiananmen.

### A Retreat From Markets, A Step Back Toward Central Planning

The directive reinstates the Grain Bureau as the prime entity to purchase grain from producers. State-owned enterprises such as flour mills will be permitted to purchase grains only from national, provincial, and prefectural grain wholesale markets. They will not be permitted to purchase grains from farmers or from township or county grain markets. To continue involvement in the grain trade business, entities now must obtain a grain trade license from the government.

### Grain Bureau Problems Continue

The State Council strongly urged the Grain Bureau to find funds to purchase and transport grain. Last year the State Council pushed the Grain Bureau to form business entities to compete in the marketplace and reduced subsidies to support its activities. Evidently the Grain Bureau has had difficulty transporting grain from surplus to deficit areas. The primary problem is an inadequate transportation system and lack of funds to transport grain. If the State Council does not allocate additional funds to transport and purchase grains, the directive likely will be hollow. Farmers have been buying and selling grain in open markets for more than a decade. Business enterprises have participated in grain markets for a shorter period of time but the combined marketing experience may



### **State Council Directive To Stabilize Grain Prices**

On June 28 the State Council issued a six-point circular directing provincial governments to improve management of grain markets to keep prices stable.

The State Council "...demanded that governments at all levels pay close attention to the following six aspects:

"First, they should attach great importance to the purchase of grain. State-owned grain enterprises should take an active part in purchasing grain according to their purchasing quotas and the relevant policies. Except for those given approval to purchase grain and engage in wholesale of grain, no other units or individuals are allowed to purchase grain directly from the countryside.

"Second, when the enterprises engaging in grain wholesale and grain-consuming units in grain-purchasing areas go to buy grain in grain-production areas, they are only allowed to buy grain on the wholesale grain markets above the county level. Transactions outside of the grain market are banned.

"Third, enterprises engaging in grain wholesale should be re-organized and re-registered. Those engaging in grain business without licenses and those hoarding or speculating in grain will be strictly punished.

"Fourth, it is necessary to make appropriate arrangements for the transport of grain from the grain production areas to the purchasing areas.

"Fifth, it is imperative to raise enough funds for the purchase and transportation of grain.

"Sixth, efforts should be made to set up and perfect wholesale grain markets in both supplying and purchasing areas. Measures should be taken to gradually standardize, legalize and modernize the grain and oil wholesale markets. Supervision and control of the prices in and transactions in grain and oil in wholesale and free-trade markets should be strengthened." (4).

be too strong for State Council directives to overcome. It may be that the marketing genie has been let out of his lamp and it may be too late to bottle him back up. Enterprising businessmen likely will find a way to circumvent the essence of this State Council directive.

### **What About Entrance to the GATT?**

This retreat from markets should make other countries pause. Is China serious about reforming its economic system? In 1993, China took steps to lessen government intervention in its grain economy. With the June directive, the government is once again planning to show a strong hand in its grain economy. Grain import and export countries should watch these developments very carefully.

### **Record 456-Million-Ton Grain Crop for 1993**

Production of wheat, rice, corn, sorghum, millet, barley, oats, soybeans, potatoes, and pulses (China's definition of grain) totaled 456.4 million tons in 1993, according to the State Statistical Bureau (SSB). Provincial grain production reported by provincial statistical communiques, newspapers, and radio broadcasts suggests a harvest close to the figure reported by the SSB (appendix table 2). Output was up 3.1 percent from the 1992 crop of 442.7 million tons. Improved farm management and good weather boosted yields 3.2 percent. Area sown to these grain crops decreased slightly (appendix table 1).

### **Good Wheat Crop Forecast for 1994**

Wheat output for 1994 is projected at 103 million tons, more than 3 million tons below the record 1993 crop. Wheat prices rose in the last few months of 1993, which heightened growers enthusiasm to grow wheat. Retail flour prices in open markets rose from 1,593 RMB per ton in December 1993 to 1,750 RMB in April 1994, a ten percent increase (5). But the rising prices were not sufficient to motivate farmers to boost area. Wheat area is projected at 29.6 million hectares, down more than 635,000 ha from last year. Some very dry, hot weather in the North China Plains could limit yield growth in 1994, and yields are projected at 3.5 tons per ha.

Wheat imports for the July/June 1994/95 year are projected to reach 10 million tons because of the projected lower 1994 crop and because the overly large wheat stocks of the past will be worked down. Imports will help meet consumer demand for higher quality and specialty wheats, and to overcome domestic transportation constraints.

### **Record 1993 Wheat Crop Reduced Demand, Holds Down Imports**

Wheat production in 1993 reached a record 106.4 million tons, 4.7 percent above 1992, as area decreased 0.9 percent to 30.2 million hectares, and yields increased 5.6 percent to 3.5 metric tons per hectare because of efficient use of inputs and good weather. Both winter and spring wheat regions had favorable growing conditions in 1993 resulting in a good quality wheat crop.

Rising incomes and population increases were the primary forces supporting demand for wheat. Wheat consumption rose steadily over the last decade, but the rate of increase slowed in 1992 and 1993. Urban consumers in north China continue to eat more high-quality baked goods, cookies, and instant noodles. But urban consumers in south China also are changing their tastes from traditional rice to wheat products.

With the growing importance of open retail markets and the government's decision to end the grain rationing system in April 1993, consumers are demanding higher quality wheat products. Consumers used to have little recourse to poor-quality rationed flour, but open markets now offer different brands of high-quality flour.

Wheat imports for the July 1993/June 1994 year are estimated at 4.5 million tons, down from the 6.7 million tons imported in 1992 and 15.8 million tons in 1991. There are several



factors behind the decline in imports. In 1992 and 1993, farmers harvested back-to-back record wheat crops. In April 1993, the government announced the end of its planned supply system in which it guaranteed urban residents wheat rations. This policy, along with the government's reorganization of the Grain Bureau, in which the government reduced its subsidies for wheat stocks, led many enterprises in the grain economy to evaluate wheat stock positions. These enterprises found they were holding larger wheat stocks than they could afford and took measures to reduce stocks. These actions led to a temporary bulge in available supplies, and hence, less demand for imported wheat. After some period of time the wheat stock issue will be resolved and normal wheat trade should continue.

### ***Rice Production Projected To Decrease in 1994***

Rice area will likely decline to 30 million hectares in 1994 as farmers shift available paddy land to more profitable cotton, oilseeds, sugar, fruit, and vegetables. One might think that rising rice prices would encourage farmers to allocate more land to rice. For example open market retail prices for japonica and indica rice varieties rose from 1,693 and 1,680 RMB per ton, respectively, in December 1993 to 2,020 and 1,840 in April 1994, an increase of 19 and 10 percent (5). But rising input costs and more lucrative prospects for other crops and other endeavors such as working in rural industrial enterprises likely will mean that rice area will decrease slightly. Farmers are likely to plant less area to higher yielding, but lower quality rice because of the difficulties in marketing the product. Yields are not expected to increase because of lower fertilizer use and the expansion of area sown to lower yielding varieties. An average yield of 5.79 tons of paddy per hectare would mean a 173.6-million-ton crop, down about 3 million tons from 1993.

For 1994/95 China's imports are projected at 300,000 tons, mainly high-quality varieties from Thailand destined for cities. For the year, exports may reach over 1.2 million tons.

### ***Rice Crop for 1993 Down 4.6 Percent***

Rice output for 1993 was 177.7 million tons (paddy basis), down 4.6 percent from the 186.2-million-ton 1992 crop. The primary reason for the decrease stemmed from a 5.4 percent decrease in area from 32.1 million hectares in 1992 to 30.4 million hectares in 1993. In the south, farmers increased the area sown to high-quality Indica rice and in the north they grew more high-quality Japonica rice. These increases, however, were more than offset by the reduced area sown to low-quality, early rice crops in south China. Rice yields in 1993 rose 0.9 percent.

Consumers in urban areas are eating less rice and more meat, fruits, vegetables, and wheat products. The opening of rural and urban free markets in the early 1980's and the announced ending of the planned purchase and planned supply system in April 1993 allowed farmers to respond to market signals and consumers to purchase rice in open markets. This set the stage for a revolution in rice consumption patterns. Previous policy stressed increasing rice output with little regard for quality. With open markets, consumers in south China bid up the price for high-quality intermediate and late crop rices

at the expense of the low-quality early rice. Urban consumers pay top prices for specialty rices such as jasmine Thai rice.

USDA estimates rice stocks for 1993 at 24.89 million tons. Farm families generally try to keep 6 months to 2 years worth on hand for their own requirements and as a kind of insurance policy against crop failures, breakdowns in the transportation system, and ill health (see special article, "An Introduction to China's Rural Grain Supply and Use Tables"). Enterprises from the old Grain Bureau try to keep about a 3-month stock of rice on hand to supply urban residents. Some rice stocks are also held in the State Council's controlled strategic grain reserves.

In most years, China is a rice importer and exporter. China's exports climbed from 933,000 tons in 1991/92 to 1.5 million tons in 1993/94. China shipped 1.04 million tons of japonica rice to Japan. Lower quality rice was shipped to Cuba, Europe, and Africa. Imports have steadily fallen from 1 million tons in 1988/89 to 400,000 tons in 1993/94. Most imports come from North Korea and Thailand and some from Vietnam (not recorded in custom data).

### ***Higher Corn Output Again in 1994***

Rising corn prices in late 1993 likely will sustain grower's interest in raising corn. For example open-market retail prices for corn meal rose from 1,318 RMB per ton in December 1993 to 1,520 RMB in April 1994, an increase of 15 percent (5). Sown area is forecast at 21 million hectares, up 300,000 hectares from 1993. Yields are projected at 4.95 metric tons per hectare, about the same as in 1993. Output for (October/September) 1994/95 is projected at 104 million tons, a 1.3-percent increase from 1993.

Corn exports in October/September 1994/95 are projected to continue at the 12 million tons of 1993/94. Major export destinations will continue to be South Korea, North Korea, Japan, Russia, Malaysia, and other Asian ports.

### ***Record 104-Million-Ton Corn Crop for 1993***

Corn output for 1993/94 was a record 102.7 million tons, up 7.7 percent from 1992, primarily because of a 9.5 percent increase in yields (appendix table 2). Cultivated area declined as farmers planted more profitable crops such as fruits and vegetables. Area sown to corn decreased by 350,000 hectares, down 1.6 percent.

An increasing portion of corn for domestic use has been used for livestock feed. In 1979, an estimated 30 percent of corn was used for feed, but this ratio rose to an estimated 69 percent in 1993. Most of the remainder is consumed by low-income rural residents. As incomes rose, rural residents, like their urban cousins, preferred to eat wheat and rice. Rural per capita food-corn consumption is estimated to have fallen from 68 kilograms in 1978 to 11 kilos in 1992. A small but growing amount is used for industrial purposes and in the food processing industry (starch).

USDA estimates corn stocks for 1993/94 at 26 million tons. China's corn stocks could be higher for several reasons. A good portion of the under-reported cultivated area in China's Southwest and Northeast regions is devoted to corn cultiva-



tion. Farmers there likely do not report the corn raised on their un-reported land. Rather, they store the corn on their farmsteads, grind it locally and feed it to their livestock.

With back-to-back record crops in 1992 and 1993, no imports are expected in (October/September) 1993/94. However, China is expected to export 12 million tons in 1993/94 and 1994/95. In world corn trade, China ranked second behind the United States for 1992/93 and 1993/94. China's Custom Bureau reported calendar year 1993 exports of 11.1 million tons worth US\$ 1,153 million. The principal destination for corn exports out of Manchuria is Japan, North Korea, South Korea, Russia, and other Asian ports.

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# Oilseed Production in 1994 To Remain Close to 1993 Record

*Oilseed production in 1994 is likely to decline slightly or remain unchanged. China's oilseed output increased by 16 percent in 1993 to a record high. Enormous increases in soybean and peanut output offset declines in cottonseed, rapeseed, and sunflowerseed production. Because of rapid economic growth and population increases, for the long run, China's demand for edible vegetable oil will continue to build, as will domestic demand for soybean meal. [Francis C. Tuan]*

## Oilseed Output Rose Substantially in 1993

Despite significant decreases in cottonseed, rapeseed, and sunflowerseed output, China's 1993 oilseed production (including soybeans, cottonseed, peanuts, rapeseed, and sunflowerseed) still reached 38.3 million tons, 16 percent over the previous year and 11 percent over the record 34.5 million tons in 1991. All of the output gain was from higher yields, as total oilseed area was down slightly from the previous year (appendix table 3).

In 1993, China reaped an enormous harvest of soybean and peanut crops. Because of increases in both area and unit yield, soybean output rose almost 50 percent to a record 15.3 million tons. The expanded area sown to soybeans, about 28.7 percent over the previous year and the largest in 29 years, contributed to 59 percent of the sharply increased output. China's soybean production hovered between 9.7 and 11.6 million tons during the previous 5 years after the record output of 12.5 million tons in 1987. Farmers were not willing to plant more soybeans with prices relatively low compared to other competing crops. However, soybean prices shot up 20.5 percent in 1992 and another 19.1 percent in 1993, from a national average of 1,559 yuan per ton in January 1992 to 2,280 yuan per ton in December 1993. The price increases undoubtedly were one of the major factors leading to the explosive expansion of area and, consequently, output of soybeans.

Like soybean production, 1993 peanut output also rose significantly to a record 8.4 million tons, 42 percent over last year and 26 percent above the previous record crop harvested in 1985. The drought-stricken peanut crop in 1992 caused peanut prices to rise sharply, leading to a 13-percent expansion in peanut area in 1993. However, the yield increase in 1993, about 25 percent over the previous year, was the principle reason for the much larger peanut output.

On the other hand, both rapeseed and cottonseed crops encountered significant reductions in acreage. Rapeseed acreage declined in 1993 because market prices for the 1992 crop fell after a record output of 7.7 million tons harvested from a near-record area. Cottonseed area plummeted in 1993 due to a cotton bollworm outbreak in 1992. Many farmers in the main cotton producing provinces, particularly Shandong, Henan, and Hebei Provinces, were not even able to recover the costs of variable inputs. They reduced cotton area and planted more corn, soybeans, and peanuts. Rapeseed and cottonseed output declined 9 and 17 percent, respectively, in 1993 (appendix table 3). Sunflowerseed production also de-

creased by about 15 percent in 1993 because of smaller area and lower unit yield. The rise of input costs and narrow profit margins in the previous year also contributed to the decrease in production.

## Oilseed Exports Declined in 1993

Although China's edible oilseed imports have remained low during the last several years, rapid growth in livestock products continues to raise domestic demand for oilseed meals, particularly soybean meal. Decreased 1992 oilseed production, about 4 percent lower than the previous year, was in part responsible for lower total oilseed exports in 1992/93. Exports of soybeans and peanuts accounted for about 90 percent of the total (table 6).

China's soybean exports rose to 800,000 tons in 1993/94, 73 percent above the 300,000 tons in 1992/93 but well below the more than 1.1 million in 1991/92, because domestic prices were higher than international prices in 1992 and 1993. China's soybean exports peaked in 1986/87 at 1.7 million tons. The importance of soybean meal as a major protein source for animals finally caught up in China during the last

Table 6--China's oilseed production and trade

Indicator	1991/92	1992/93	1993/94
1,000 tons			
Total oilseeds /1			
Production	34,526	33,040	38,290
Imports	138	155	60
Exports	1,453	658	1,330
Soybeans (Jul/Jun)			
Production	9,710	10,300	15,310
Imports	136	150	60
Export	1,090	300	800
Cottonseed (Jan/Dec)			
Production	9,660	7,664	6,370
Imports	0	0	0
Exports	17	18	10
Peanuts (Oct/Sep)			
Production	6,300	5,953	8,421
Imports	0	0	0
Exports	311	300	450
Rapeseed (Oct/Sep)			
Production	7,436	7,653	6,939
Imports	2	5	0
Exports	18	20	50
Sunflowerseed (Oct/Sep)			
Production	1,420	1,472	1,250
Imports	0	0	0
Exports	17	20	20

/1 USDA definition includes soybean, cottonseed, peanuts, rapeseed, and sunflowerseed.

Source: USDA.



few years. In the early 1980's, farmers in China mainly used soybean meal as fertilizer. Only in the mid-1980's did livestock production and feed industries start mixing soybean meal with grains for livestock feed. In the last 2 years, soybean meal has probably been replacing some of the fish meal traditionally used in formula feed in China. China reportedly produced about 40 million tons of mixed and compound feed in 1993, compared with 7 million 10 years ago. The domestic demand for soybean meal should continue strong in the future because of expected rapid growth in livestock products.

Like soybeans, peanuts produced in China have been consumed directly as food and also crushed for producing edible vegetable oil. China has been a major food-peanut exporter for more than a decade. The quantity of China's peanut exports has fluctuated between 150,000 and 450,000 million tons since 1980, largely depending on international prices. China's peanut exports usually picked up as foreign production declined. In 1993, China exported about 450,000 tons of various forms of peanuts. All other oilseed exports remained low, roughly the same as the previous year.

### ***Imports of Edible Oils Fell; Meal Exports Also Decreased***

Despite a slight decline in oilseed production in 1992, two consecutive years of record rapeseed output in 1991 and 1992 led to a decrease in edible oil imports in 1993. Meanwhile, rapeseed oil imports, significant during the previous 4 years, were ceased. In China, rapeseed oil is a major edible vegetable oil consumed throughout the Yangtze River Valley area and in many major urban cities. However, the quality of rapeseed oil is low and needs to be improved. Urban residents who have consumed better quality rapeseed oil with lower erucic acid content expressed their preference for the high quality oil and a willingness to pay for it. China is currently breeding better rapeseed varieties and improving and expanding oil processing facilities in order to produce higher quality rapeseed oil.

China's 1993 soybean oil imports fell significantly to 100,000 tons compared with 223,000 and 460,000 tons in 1992 and 1991, respectively. Higher unit prices of soybean oil in the world market and increased domestic supply of rapeseed oil during the last 2 years was the primary reason behind lower imports. In general, China's Government discourages imports of large quantities of edible vegetable oils for human consumption because of its trade policy in limiting use of hard currency to buy expensive and so called "luxury" agricultural commodities.

However, China does import large quantities of lower-valued palm oil, mainly from neighboring southeast Asian countries, especially Malaysia, to supply the increasing demand for processed food in both export and domestic markets. Imported palm oil prices have been very competitive during recent years, even after customs duties and service fees were added (see special article, "China's Application for GATT Accession: Issues and Potential Implications"). China imported 791,000 tons of palm oil in 1993, 36 percent more than 1992, but still 31 percent lower than the record 1.1 million tons imported in 1990.

### ***Oilseed Production Likely Unchanged in 1994***

Area sown to oilseeds in 1994 is expected to increase slightly or remain the same as the previous year. The increases in area sown to rapeseed and cottonseed crops are expected to be somewhat more than offsetting the decline in area sown to soybean and peanut crops. After a sharp increase in area in 1993 (appendix table 3), soybean production is not expected to have another significant area expansion in 1994. Even if soybean prices remain high, limited cultivated area will constrain additional gains. Any area expansion in a crop is at the expense of another crop. In 1993, area sown to cotton dropped by more than 1.8 million hectares and allowed soybean area to increase significantly. However, in 1994/95, cotton area will likely increase about 10 percent over the previous year after the bollworm infestation in 1992 and 1993. With strong domestic demand for soybeans, as reflected by the prevailing high prices, increased soybean output in 1994 will likely come from yield advances. However, soybean output in 1994 is expected to be lower, around 14 million tons, assuming a return to more normal yields.

Similarly, record peanut output of 8.4 million tons in 1993 is not expected to be surpassed easily in the near future because of the record unit yield (2.49 tons/ha) and area required. As in the case of soybeans, the increase largely resulted from a shift in area from cotton, particularly in Shandong province. In 1994, increased cotton area suggests a slight decline in peanut area. Assuming a more normal yield of 2.3 tons per hectare and area sown to peanuts remaining at 3.3 million hectares, peanut production in 1994 will reach about 7.5 million tons, down 11 percent from last year's record crop.

China's rapeseed area will likely rise slightly in 1994. Rapeseed output, assuming the same yields as in 1993, is expected to be more than 7.5 million tons. Cottonseed production is also expected to improve in 1994, because of higher area and unit yield. It is generally expected that insect infestation will not be as damaging as in 1992. Finally, sunflowerseed production in 1994 is likely to remain roughly the same as its average over the last 3 or 4 years, at around 1.3 million tons.

### ***Oilseed, Meal, and Oil Trade Likely To Remain Active in 1994***

Net exports of oilseeds in 1994 are expected to remain flat, around 1 million tons, despite record oilseed production in 1993 (appendix table 3). This is mainly because of increasing domestic demand, particularly for soybeans. China's soybean exports are not expected to increase in 1994, because domestic prices are still higher than world prices. Soybean exports to Japan for food processing will continue, at 250,000 to 300,000 tons. China's soybean imports are likely to be nil in 1994.

China's peanut exports are likely to continue. Domestic prices are lower than the international markets, and exports bring in the hard currency that China's central and local governments need. However, China's domestic demand for edible vegetable oil is recovering; urban residents have gotten used to higher oil prices. The dismantling of the low-price urban rationing system took place almost 3 years ago. Even though only half of peanut output is crushed for oil, it is still one of the major vegetable oil sources. China's total per



capita oil consumption is quite low compared with world averages. The majority of increased peanut output is expected to be crushed for oil. Other oilseed exports and imports are likely to remain at the relative lows (table 6) of the past 2 or 3 years.

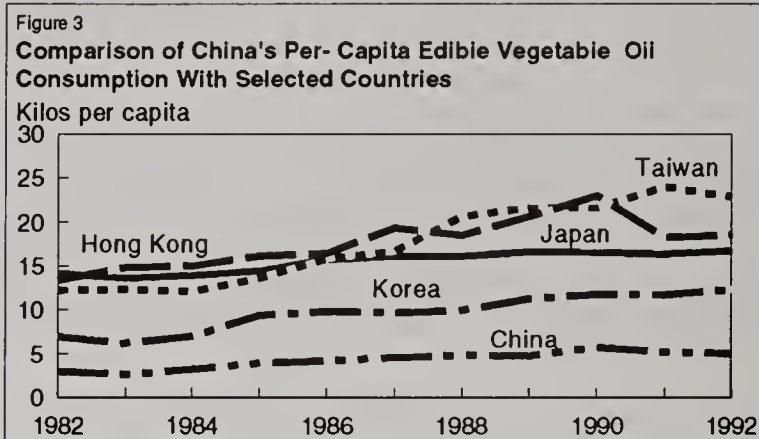
China's meal exports have declined in the past 2 years because less soybean meal has been exported and domestic demand has grown rapidly. However, exports of rapeseed and cottonseed meal basically were not affected since they contain toxic materials and are not suitable for feed manufacturing. Without a sufficient supply of non-toxic rapeseed and cotton meal, China's soybean meal will remain in high demand. This is also why the popularity of soybean meal has pushed the price up sharply despite record soybean production in 1993. It is expected that domestic demand for protein meal will continue to grow this year. Therefore, exports of soybean meal in 1994 will not surpass 500,000. China exported 2.2 million tons of soybean meal in 1991.

Edible vegetable oil imports in 1994 are expected to rise despite the record oilseed crop harvest in the previous year. China's 1994 soybean oil imports are expected to be more than the 100,000 tons in 1993 and 225,000 tons in 1992. The increased imports may, in part, imply that China is to provide its food processing industry with quality oil to upgrade some of the export food products. Rapeseed and peanut oil imports in 1994 are not expected to increase over last year's 150,000 and 10,000 tons, respectively. Palm oil imports could continue to increase, because the food processing industry mainly depends on imported palm oil to produce export food products and maintain its competitiveness in the world market.

### Long-Term Outlook for Oilseed and Oil Imports

After very impressive growth in oilseed crop production in the last 15 years, China's edible vegetable oil consumption is still very low compared with world averages and with the per capita consumption levels observed in neighboring countries or regions, such as South Korea, Japan, Taiwan, and Hong Kong (fig. 3). As shown in the figure, China's per capita consumption of edible vegetable oil is only about half of that of South Korea and much lower than Japan and their cousins in Taiwan and Hong Kong.

Based on the experiences of other developing countries, China's per capita edible vegetable oil consumption will expand significantly as rapid economic growth continues. In



general, an increase of 1 kilogram of edible vegetable oil for each person in China can be translated into an increased demand of more than 1 million tons per year. With limited cultivated area and a large population, China will either need to import more oilseed or more edible oil to make up the likely deficit, particularly if China's trade regime is liberalized as the country is admitted into GATT. Assuming a more open trading system, China's current under-used crushing facilities (including joint ventures) suggest that the country will likely import more beans in the future, because the residuals or meal produced after oil extraction can be used in feed manufacturing to meet the expected rapid growth in livestock output.

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## Cotton Output and Area Decline in 1993/94

China's 1993/94 cotton output fell 17 percent to 3.75 million tons due to bollworms and flooding. Area and production will likely increase 10-15 percent in 1994/95. However, cotton procurements are again expected to be problematic because of the growing black market for cotton to supply rural yarn and textile operations at the expense of state-run enterprises. [W. Hunter Colby]

### Output and Area Decline in 1993/94 Due to Bollworms and Flooding

China's 1993/94 (August-July) cotton area was 5 million hectares, down 27 percent from the previous year (table 7). Initial sown area planting intention reports in China's press did not anticipate such a severe decline, but a second year of cotton bollworm (*Heliothis Armidera*) infestation and flooding in some eastern provinces resulted in farmers abandoning cotton area in harder hit locations. Other areas with less severe bollworm infestation were able to combat the pest through the use of lamps to attract it at its moth stage and reduce the worm population. Better pest management and more informed use of appropriate pesticides saw cotton yields increase 14 percent over 1992/93 to 749 kilograms per hectare, resulting in a 17 percent decline in production to 3.75 million tons.

As in the previous year's bollworm infestation, damage was concentrated in the North China Plain, though some infestation was reported in more southerly areas as well. The hardest hit provinces included Shandong, Henan, Hebei, and Hubei (table 8). Jiangsu and Shandong cotton area was hit by localized flooding in late July and early August. Unlike the

previous year where moderate production increases in other regions helped alleviate the insect-induced reduction in output, in 1993/94 production declined to some degree in all but four provinces.

Unlike in 1992/93, cotton procurement in 1993/94 was not disrupted by the use of IOU's (where in lieu of cash, IOU's were given to farmers by the state cotton procurement agency, the Cotton and Jute Corporation). Concerted efforts by the central government and harsh threats to provincial and local officials were effective in insuring sufficient funds were on hand for the cotton procurement season.

However, despite the disappearance of IOU's, the cotton procurement process in 1993/94 did not progress smoothly. Information from a variety of sources, including the Cotton and Jute Corporation, textile officials, and yarn and textile factories suggests the state's share of total procurement will be significantly lower this year. The reduced cotton output in 1992/93 and 1993/94 caused the state's delivery of raw cotton to textile firms to be less than planned. This prompted textile firms to look outside of the state system to find needed cotton supplies. Black market cotton marketing expanded in 1993/94 as mills, particularly rural ones but also including some state-run enterprises, bid up the price of black market cotton purchased directly from farmers or from illegal middlemen and attracted even more cotton into that market. Although all cotton is still supposed to be purchased at the official price set by the state, outside-the-state prices reportedly commanded a large premium, in some areas climbing to more than double the official state-set price of 6,600 yuan per ton. Exactly how much cotton moved outside the state system this year will not be known until the Ministry of Internal Trade (the parent ministry over the Cotton and Jute Corporation) releases government procurement data later this year.

### Imports Rise To Alleviate Supply Deficit

China's cotton imports rose dramatically in 1993/94 due to the second poor harvest in a row and continued strong domestic and export demand for textiles and apparel. Despite the poor 1992/93 crop, cotton imports were only 53,000 tons. Imports in 1993/94 were negligible until China suddenly bought over a million tons on the world market between March and June for delivery before the end of the marketing year (when supply from the 1994/95 crop becomes available). Imports for 1993/94 are an estimated 185,000 tons, 249 percent above 1992/93.

Conversely, exports fell slightly, dropping to an estimated 163,000 tons from 149,000 in 1992/93 because of higher

Table 7--China's cotton supply and use

	1991/92	1992/93	1993/94	1994/95
	1,000 tons			
Beginning stocks	1,376	3,080	2,687	1,882
Sown area	6,539	6,835	5,000	5,550
Production	5,683	4,507	3,745	4,355
Imports	355	53	185	305
Consumption	4,137	4,682	4,507	4,572
Loss	65	131	65	0
Exports	131	149	163	131

Official USDA data (WASDE). 1993/94-94/95 are estimates.

Table 8--Cotton output, selected provinces, 1989-93

Province	1989	1990	1991	1992	1993
	1,000 tons				
Xinjiang	295	469	639	668	680
Henan	527	676	948	659	660
Jiangsu	485	464	557	527	429
Hubei	313	517	491	610	425
Shandong	1,025	975	1,351	677	410
Anhui	170	236	271	256	260
Hunan	67	120	149	203	211
Hebei	536	571	634	350	192
Sichuan	85	115	146	151	82
Shanxi	102	112	112	95	70
All others	183	253	377	399	320
Total	3,788	4,508	5,675	4,508	3,739

Sources: 1989-92 in China Statistical Yearbook, 1990-93;



domestic producer prices and reduced supply. It is unclear why exports continued in a year where domestic supply was so short, though a continued need to earn foreign exchange may be part of the answer. Exports may also have been supported by the typically glacial response time of the State Council during a period of change (the State Council is the government body responsible for developing each year's cotton trade plan).

### **China Stock Estimate Lowered**

Although information about cotton stocks are still considered to be a state secret in China, in the last few years many Western analysts generally agreed that they were quite high. Early in 1993/94, China was believed to be drawing down stocks to make up for the shortfall in production, and confirmed when China's press announced 1 million metric tons of cotton had been released from state reserves. However, evidence was gradually accumulating that a significant share of China's stocks was of such poor quality that it was unspinnable. Therefore, official USDA estimates were changed to show a series of stock losses (65,000 tons in 1991/92, 131,000 in 1992/93, and another 65,000 in 1993/94) to reflect the portion of China's stocks considered to be unusable.

### **Area and Output Gains in 1994/95**

Cotton officials expect the positive trend in controlling bollworms begun in 1993/94 to continue in 1994/95. The government is pushing for more extension work on the proper pesticide use and other pest management techniques. These include use of high-intensity lamps to attract and kill the moth stage of the pest, reduction of intercropping, and more coordinated pesticide application between farmers with contiguous fields.

To stimulate increased area and to counter higher input costs (both from greater use and rising prices), the central government announced an increase in the average official state procurement price for the 1994/95 crop from 6600 yuan per ton to about 8000 yuan. In addition, the government announced an increase in the cash add-on for inputs from 220 yuan per ton to 320 yuan. Government investment, both at the central and provincial level are also expected to rise, particularly measures aimed at controlling the bollworm infestation.

Despite the increase in price, farmers who experienced substantial losses are not likely to resume growing cotton. The high prices expected for soybeans and peanuts next year means some farmers will choose to raise these competing crops and avoid cotton altogether. Nevertheless, the higher procurement price and the relative success in combating bollworms in 1993/94 (compared with 1992/93) is expected to produce an increase in cotton sown area for 1994/95 to 5.55 million hectares. Assuming normal weather and no upsurge in the bollworm population, yields are expected to rise to 770-800 kilograms per hectare from 749 kilograms in 1993/94. Therefore, production is also expected to rise, though supply will again be insufficient to meet demand from

the textile sector, resulting in continued upward pressure on cotton imports and downward pressure on exports. China's imports and exports are expected to be 305,000 and 131,000 tons, respectively.

The cotton policy situation in China is now less opaque following the poor 1992/93 and 1993/94 harvests. Early in 1992/93, when China's officials assumed cotton would have another bumper crop, a wide range of provincial-level reforms and experiments in cotton marketing were announced. However, as the 1992/93 season progressed and the poor crop became evident, all reforms were put on hold. Throughout 1993/94 there was no discussion in China's press of reviving the stalled reforms and, given the poor area and output this year, it is unlikely any substantial reforms will be attempted until the 1995/96 season at the earliest.

The most recent cotton policy change, announced at the National Cotton Conference on August 29, 1993 was a second government procurement price increase effective September 1, 1994. Aimed at curbing black market cotton procurements in 1994/95, it raises the price paid to farmers from 8000 yuan per ton to 10,000 yuan. Although cotton officials are hoping the price increase will encourage increased cotton sales to supply and marketing cooperatives, the official state procurement agency, the fact that black market prices were reported as high as 16,000 yuan per ton in some places raises doubts about its effectiveness. In addition, the central government announced that all cotton wholesale markets established by local governments must be abolished and textile enterprises are forbidden from procuring cotton directly from farmers.

No matter how effective the price increase is in curbing black market cotton procurements, it likely will only have a modest impact on total cotton consumption in 1994/95. The failure to draw cotton back into the official distribution system will be continued struggling and even failing state textile enterprises again this year.

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# Sugar Production Drops Off Dramatically

*Sugar production is expected to fall an estimated 18.1 percent in 1993/94 as low prices, rising input costs, and delayed payments to farmers discouraged beet and cane production. Production in 1994/95 is expected to decline another 4.4 percent because of continued low returns to cane and beet and typhoon damage in South China.*

*[W. Hunter Colby]*

## Low Sugar Crop Returns Reduce 1993/94 Output

China's 1993/94 (October/September) sugar output is expected to fall 18.1 percent from the previous year to 6.8 million tons raw value (table 9). Marketing and price reforms introduced in 1991 and 1992, combined with record output in 1991/92, caused sugar crop and refined sugar prices to fall in 1992/93. Cane and beet production were also affected by rising input costs, the use of IOUs by sugar mills in some regions, and increased returns from competing crops. China's State Statistical Bureau reported 1993/94 beet production falling 20 percent to 12 million tons and cane output declining 12 percent to 64.2 million tons.

Although lower retail sugar prices played a role in reduced 1993/94 crop output, beet production was seriously affected by low returns relative to other competing crops under the new liberalized system of government non-intervention in planting and procurement pricing decisions. Farmers were free to choose what crop they preferred to plant, while mills were forced to purchase beets based on the expected returns for refined sugar on the open market. Low sugar prices, lower returns relative to cane production, and the memory of delayed payments during the previous year's beet procurement season all combined to dramatically reduce sugar crop production.

Though sugarbeet area only fell 9.2 percent, production fell 20 percent, declining from 15.1 million tons in 1992/93 to 12 million in 1993/94. Beet sugar output also declined, falling to 1.17 million tons (table 10). Reduced profits for beet production even prompted area to decline in what had been a rapidly expanding beet area, the Xinjiang Autonomous Region. Major competing crops for beet area in the Northeast included grains and soybeans.

Cane area and production also fell in 1993/94 because of low returns, particularly in Guangdong province. Cane sugar production declined as well, falling from 6.65 million tons in 1992/93 to an estimated 5.63 million in 1993/94. Low procurement prices, reduced incentives, the increased competitiveness of fruit and vegetable crops, and rising competition for area from non-agricultural projects (roads, factories, houses) caused Guangdong cane area and production to fall sharply. Cane production fell more modestly in the other two major cane producing provinces, Guangxi and Yunnan. Guangxi retained its position as the number one producing province. Guangdong cane output fell more than 6.6 million tons to 17.1 million, while Guangxi production fell less than 500,000 tons to 23.1 million. The reduction in Guangdong cane area and production is likely to be permanent.

Table 9--China's sugar supply and use

Item	1991/92	1992/93	1993/94	1994/95
1,000 metric tons, raw value				
Beginning stocks	1,350	2,002	905	605
Production	8,492	8,300	6,800	6,500
Imports	1,230	506	600	1,500
Consumption	7,650	7,800	6,900	7,400
Exports	1,420	2,103	800	300

Official USDA (WASDE) data. 1993/94-94/95 are estimates.

Table 10--China's beet and cane sugar output

Item	1991/92	1992/93	1993/94	1994/95
1,000 metric tons, raw value				
Total sugar	8,492	8,300	6,800	6,500
Beet sugar	1,815	1,650	1,166	1,153
Cane sugar	6,677	6,650	5,634	5,347

USDA Oct/Sept marketing year data. 1993/94 and 1994/95 data are estimates.

## Short Supply Constrains 1993/94 Consumption

The precipitous decline in refined sugar availability and rising consumer prices reduced China's 1993/94 sugar consumption by 12 percent to 6.9 million tons. Although the government moved to increase supply by expanding import quotas and releasing sugar from state reserves, it was not enough to counter the decline in domestic production. Increased supply in 1994/95 is expected to raise consumption 7 percent to 7.4 million tons--though still well short of the 1992/93 record of 7.8 million.

Rising consumer incomes and rapid growth in the food processing and beverage industry will support continued increases in per capita consumption well into the next century. Sugar officials in China estimate that between 1979/80 and 1992/93, the share of total sugar supply utilized by the food and beverage industry increased from 30 percent to 65 percent. China's sugar production is expected to increase in the future in response to this demand, though China will still need to gradually increase imports to supply the burgeoning food processing industry.

## Has Artificial Sweetener Production Really Declined?

The only significant competitor to sugar in China is saccharin; there is little to no aspartame and HFCS (high fructose corn syrup) production. Since 1991, saccharin production has declined under pressure from the government, which was concerned about health effects and likely also wanted to support



sugar farmer incomes. Between 1991 and 1993, saccharin output reportedly declined from 10,000 tons to 6,000 tons, according to China's Ministry of Light Industry. However, given the low level of sugar production, the extraordinarily low level of sugar stocks, and what could be considered only moderate levels of sugar imports, it seems plausible to assume that saccharin production may not in fact have fallen as dramatically as the Ministry of Light Industry statistics indicate. Robust demand by the food processing industry, particularly rural soft drink makers, may have tempted saccharin producers to continue producing at high levels while reporting reduced output to the Ministry.

### ***Rapid Rise in Sugar Imports Likely for 1994/95***

Imports in 1993/94 are expected to increase only slightly to 600,000 tons from the previous year's 506,000, their lowest since the mid-1970's, because of a steep decline in shipments from Cuba, China's traditional government-to-government (barter) trade partner. The January 1, 1994, unification of the dual exchange rate system and devaluation of the currency may also have dampened imports by reducing the currency arbitrage profits available to some state sugar trading companies.

Imports in 1994/95, however, are expected to climb sharply to 1.5 million tons, their highest level since 1988/89. Although there have been press reports suggesting the central government has, or is planning to, slash the import duty on sugar by 50 percent, officials in China have not been able to confirm this change. Nevertheless, robust domestic demand, slack production, and very low stocks all necessitate sharply higher sugar imports in 1994/95, notwithstanding any reduction in import duty. The continued lack of exportable supplies from Cuba, traditionally China's most important source for imports, means China will be looking on the international market for new sources of supply. Despite healthy domestic demand, imports will not increase as sharply as occurred between 1987 and 1989 when the government temporarily liberalized sugar import controls. The central government

continues to tightly control the issuance of sugar import quotas because of its reluctance to spend foreign exchange on what is regarded as a non-essential good compared with food grains and some industrial raw materials.

### ***Exportable Surplus Dwindles***

The same factors that are increasing imports in 1993/94 will sharply dampen exports. Shipments are only expected to reach 800,000 tons, down 62 percent from 1992/93's record high of more than 2.1 million. To date, over 55 percent of exports have gone to Russia and other republics of the former Soviet Union. Higher exports were facilitated by increased barter trade along the northern border, increased decentralization of sugar trade authority, and the devaluation of the currency. Sugar exports were liberalized in July 1993 when the government's export quotas and licensing systems were eliminated (though they have been retained for imports). However, the government was able to moderate exports by eliminating the program that had reimbursed 80 percent of the sugar mill export tax.

Exports in 1994/95 are expected to fall another 63 percent to 300,000 tons under continued pressure from internal demand. Sugar stocks have dwindled and rising domestic prices will limit exports to their lowest level since 1988/89.

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## **Rapid Growth To Continue in Livestock Sector**

*China's livestock inventory and meat production will continue to grow rapidly in 1994. Market deregulations are improving producer incentives as rising consumer incomes are increasing meat demand. Meat and live animal imports continue to be tightly controlled, either by high tariffs or onerous inspection procedures. [W. Hunter Colby]*

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### ***Production and Trade Outlook for 1994***

The outlook for the livestock sector in 1994 is for continued rapid growth in inventory, slaughter rate, and meat production. The expected high economic growth will lead to robust increases in consumer meat demand. Producers will likely respond to expected higher meat prices with increased slaughter, though rising feed costs will be a limiting factor.

Government policies initiated in 1991 but in effect throughout the eighth 5-year plan (1991-95) include: promoting rapid

development of livestock production in the Northeastern corn-surplus provinces; limiting state subsidies by reducing the ratio of state to free-market hog procurements; pushing major metropolitan areas to reach at least 30 percent self-sufficiency in meat production; and promoting the development of regional and national livestock product wholesale markets.

Despite priority on the beef and poultry sectors, hog inventory will likely continue to increase in 1994 in response to continued demand for meat products by urban residents and the



surplus of on-farm grain stocks. Although markets are springing up all over China, many of the markets remain relatively narrow, so many farmers will still end up choosing to feed livestock, primarily hogs, rather than sell grain on what they may see as an uncertain market.

Beef cattle inventory and beef output are expected to continue to increase in 1994 because of government support for beef cattle development and ongoing market reforms. Commercial cattle operations, rather than backyard operations, account for nearly all of the inventory increase, leading to more efficient feeding and higher slaughter weights. Sheep and goat inventory and mutton output are also expected to increase, though likely at a more modest rate than in 1993.

Demand for poultry and eggs should continue to rise sharply, driven by increased urban demand and support from the government policy promoting poultry as the most feed-efficient means of meat production. Large, efficient poultry operations have been established near most major metropolitan centers. Municipal government policies supporting poultry meat and egg production will keep output growth high in 1994.

Although demand for meats has risen in both urban and rural areas, per capita consumption remains 100 percent higher for the urban population. Demand for meat in urban areas will continue to increase, but rising incomes among China's 800 million rural residents are expected to be the driving force behind future increases in meat demand.

China's livestock and meat exports will likely remain flat in 1994. Imports, though rising in some cases (beef and poultry meat), will continue to be nominal relative to total domestic consumption. Technical discussions with the United States and China's ongoing GATT accession negotiations may lead to a reduction in China's high tariff rates and unusually strict quarantine regulations. Ultimately, this may prompt U.S. live animal and meat exports to increase, though significant U.S. shipments remain unlikely in the near future.

Live hog exports to Hong Kong may be slightly lower in 1994, continuing the trend begun in 1993. Although it is not confirmed, concerns over a rumored foot-and-mouth disease outbreak and increased smuggling (which is not captured in official trade statistics) to Hong Kong may be factors in the decline.

Beef imports to supply China's hotel trade, particularly from Australia, are expected to rise somewhat in 1994. Australian rather than U.S. beef tends to dominate because of very competitive pricing and trade service. Live cattle exports should decline in 1994 as interest turns to exporting higher-value meat cuts and declining live-animal exports to Hong Kong.

### ***Inventory and Meat Output Expansion Continues***

China's livestock sector experienced another year of robust growth in 1993. Bumper grain harvests during the last 5 years, liberalized grain prices, the decline in the ratio of government to free market meat procurements, and increased consumer demand for meat fostered rising livestock invento-

ries and meat output. Higher quality feeds, better herd management, sustained market and distribution reforms, and breed improvement programs were also factors in China's growth in meat production.

According to the 1994 China Statistical Summary, pork, beef, mutton, and poultry output continued their rapid growth, increasing 8.3, 29.6, 9.9, and 13.6 percent, respectively, from 1992 (table 11). Responding to the government's policy of increasing the consumption share of beef and poultry relative to pork, the 1993 increase in beef and poultry meat output was higher than pork. Despite no government meat subsidies for urban consumers in 1991, which increased retail meat prices, overall meat consumption continued to rise rapidly and swelling producer profits stimulated supply.

China's hog sector continues to be dominated by relatively small backyard producers. However, the number of larger, more efficient specialized-livestock households and commercial operations is rising. Likewise, improved hybrid breeds are more widespread as consumers demand leaner cuts of pork. The significance of these two trends is that improved hog breeds are increasing feeding efficiency, while the additional commercial hog operations are expanding hogs on commercial grain-based feeds (versus non-grain feeds primarily used by backyard producers).

The hog slaughter rate (beginning inventory divided by total slaughter) in 1993 was 98 percent, up from 95 in 1991, though still well below the 150 percent or more reported in many developed countries. In 1993, hog slaughter reached 378 million head, surpassing the state hog slaughter target for the year 2000 by more than 78 million head. The central government continues to push for higher hog slaughter weights, slower inventory growth, and increased slaughter rates.

Cattle inventory underwent another year of dramatic growth, particularly in farming areas where the availability of forage and feedstuffs has increased. Yearend inventory reached more than 113 million head, up from about 108 million in 1992. Government policy continues to promote the development and use of non-grain feedstuffs, including ammoniated straw and green fodder stalks. In 1993, 40 additional counties were added to the existing 10 that receive special government aid to promote this policy. In addition to the jump in cattle inventory, beef production surged nearly 30 percent over 1992 in response to larger average carcass weights, an estimated

Table 11--China's livestock inventory and meat output

Items	1990	1991	1992	1993
	1,000 head/tons			
Hogs /1	362,408	369,646	384,211	393,000
Pork	22,811	24,523	26,353	28,544
Cattle /1	102,884	104,592	107,840	113,160
Beef/veal	1,256	1,535	1,803	2,337
Sheep/goat /1	210,021	206,210	207,329	217,310
Mutton	1,068	1,180	1,250	1,374
Poultry meat	3,229	3,950	4,542	5,160

/1 Yearend inventory.

Sources: 1993 China Statistical Yearbook, 1994 China Statistical Summary, and USDA/FAS Beijing Poultry and Livestock Reports.

higher slaughter rate, and increased consumer demand for beef and veal.

Sheep inventory increased dramatically in 1992 after 3 consecutive years of flat-to-declining numbers. Mutton and goat meat also increased, rising 9.9 percent over 1992 to nearly 1.4 million tons. Mutton production and consumption is mostly concentrated in a few northern and western provinces. Rising slaughter weights and rates have kept mutton and goat meat output on the upswing, even during the years of low or declining inventory growth, in large part because of central and provincial government policies aimed at settling nomadic herders, improving herd management, and improving breeding programs. In addition, government policy was also a factor in the drastic reduction in winter lamb kill by encouraging the use of winter shelters, and thereby dramatically improving returns to the herder.

### ***Livestock and Meat Exports Fell in 1993***

Continuing a trend begun in 1990, China's live cattle and beef exports declined in 1993 because of improved domestic demand and a government policy of exporting more value-added meat products. China imported 2.1 million tons of beef in 1993, mainly high-quality beef from Australia to supply hotels and restaurants. Beef exports are expected to continue to decline in 1994, while imports are likely to reach 4 million tons. Beef imports would be growing even faster were it not for China's high tariffs and very difficult inspection system.

China's live hog exports, almost solely to Hong Kong, have remained fairly steady over the last 5 years, hovering between 2.7 and 3.0 million head (table 12). An export quota restricts hog shipments, so despite additional demand in Hong Kong, exports are not expected to change much. Fresh pork exports increased slightly in 1993, but are still far below the 1990 peak of 124,000 tons, due to reduced imports by Russia and Hong Kong. China apparently does not allow fresh pork imports, though no published prohibition has been identified. Live hog imports continue to be severely restricted by fierce

Table 12--China's livestock and meat exports, 1990-93

Item	1990	1991	1992	1993
1,000 head/tons				
Live cattle	190	173	166	143
FCF beef /1	97	132	27	22
Canned beef	42	64	36	95
Live hogs	2,999	2,850	2,913	2,744
FCF pork /1	124	117	48	59
Canned pork	91	128	58	78

/1 Fresh, chilled, and frozen meat.

Sources: FAS Livestock Annual and Semi-Annual Reports.

quarantine regulations and are not expected to rise much under the current quarantine regime.

China's long-term meat trade will likely evolve slowly. Beef imports, particularly higher quality fresh, frozen, or chilled should continue to modestly but constantly increase as personal incomes grow. Fresh, frozen, or chilled poultry meat imports, including certain high-demand parts like paws (chicken feet), should see continued strong growth. U.S. export prospects are improving, but China's trade laws and practices continue to inhibit U.S. sales. Assuming China stays on the path of liberalizing trade, U.S. meat and animal exports will likely accelerate.

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## China's Application for GATT Accession: Issues and Potential Implications

*Susan Scurlock Theiler and Francis C. Tuan*

China withdrew from the GATT in 1949 and in 1986 applied to join the General Agreement on Tariffs and Trade (GATT), the organization that governs world trade. To meet the GATT Working Party's requirements, China has announced a series of reforms. The Working Party has proceeded with China's application cautiously because of the lack of transparency of China's state trade regime. Negotiations between China and the GATT members in the working party meetings will result in a protocol that outlines the terms of accession, including changes required in China's trade system and China's commitments such as tariff concessions. The protocol will also include the disciplines developed in the Uruguay Round Agreement which created the new World Trade Organization (WTO). China's accession should bring economic benefits for all GATT contracting parties.

### Introduction

After 15 years of reform, China has emerged as a world trading giant, but it is not yet a party to the world trading body, the General Agreement on Tariffs and Trade (GATT). As the

world's most populous country, in the top ten both for GNP and foreign trade, China's entry would bring significant economic benefits for all GATT contracting parties.

At issue, however, is whether a centrally-planned economy with a government monopoly on economic activity could be incompatible with the GATT charter. Most GATT countries have a democratic, market-based orientation. GATT principles of free and open trade on a level playing field without government subsidies are essentially at odds with a government-dominated economy. From 1949, when China withdrew from GATT, until the historic Party Congress of 1978, China's economy relied almost entirely on state control, fixed prices, and self-sufficiency. The 1978 Plenum was the beginning of a change comparable to another revolution: China embarked on a program of economic reform based on market forces which led to the policy of opening to the outside world. Economic activity and foreign trade exploded. By 1986, China applied to join the GATT and announced its readiness to accept the responsibilities along with the privileges of GATT membership.

Upon receipt of China's application, a Working Party made up of interested GATT members initiated an in-depth inquiry into China's economic policies. The Working Party has already met 18 times in Geneva on China's issues. The group's role is to recommend the terms for GATT membership after examining information provided by China to assess the consistency of that country's policies with GATT principles. The group's work will result in a document, or protocol that outlines the terms of GATT/WTO accession, including changes required in China's trade regime and China's commitments. China is no longer just applying for membership in the GATT of 1947, but rather to the GATT and WTO simultaneously. Along with the protocol, a schedule of tariff concessions, including an agricultural country schedule and

commitments on services, must be approved. These documents are then voted upon by all GATT members.

To date, the accession meetings have also constituted a monumental education process in which China's economic decisionmakers have been instructed in GATT requirements. The 1947 GATT accord set out to bring fairness and equity to international trade by enabling the principle of comparative advantage to determine trade flows without undue government subsidies or high tariffs to distort prices. GATT principles include:

- Transparency -- which entails notification, publication, and uniform application of trade regulations;
- Most-favored-nation treatment -- whereby tariffs or trade concessions applied to one country should apply equally to all GATT members; and
- National treatment -- meaning that imports must be taxed, handled, or distributed in the same manner as domestic products.

GATT's fundamental principle is trade liberalization and expanded commerce through reduction in barriers to trade--GATT members basically must accept the reciprocal obligation to permit imports.

The Working Party has proceeded cautiously because so much is riding on China operating its foreign trade regime in accordance with free trade and market principles. Another reason, perhaps, for the Working Party's cautious approach is because of Taiwan's parallel application to GATT, which has caused delicate diplomatic problems. China is a major world economic player and has become a serious export competitor in many fields, notably textiles, toys, shoes, and agricultural products such as corn.

China already enjoys most of the benefits of GATT membership. It has bilateral trade treaties with many countries providing the lower tariffs reserved for GATT members and



most-favored-nation (MFN) trade partners. Many of the most important GATT members are running large trade deficits with China, particularly in manufactures. By bringing China into the GATT/WTO, these countries wish not only to enjoy access to China's market, but also to establish safeguards against possible surges in China's exports to them.

Further assurances were required because China's reform program has made such uneven progress since 1978. Periods of liberalization have alternated with periods of retrenchment and renewed government control over trade, causing concern that any trade concessions made by China might be withdrawn in the future. China's secretive decisionmaking processes have complicated the efforts of the Working Party, since transparency is a vital requirement for GATT membership. China is a vast country, and policies differ widely in different regions. It has been difficult to assess whether announced policies are uniformly implemented. Different ministries appear to enforce different policies, and the banking system also functions inconsistently.

To meet the Working Party's requirements, China has announced a series of reforms including tariff reductions, publication of regulations, revision of currency policies, elimination of import quotas, enlargement of foreign trading rights beyond the state trading corporations, and elimination of direct export subsidies, among others. Certain measures seemed far-reaching and significant but fell short of expectations, while others have not yet been fully implemented. China's statements to the Working Party continue to emphasize the guiding principles of export promotion and import substitution.

### ***United States Bilateral Negotiations with China***

The United States, through its separate agreements with China on market access, intellectual property rights, and services, has played a leading role in pushing the Chinese foreign trade regime in a GATT-compatible direction. As China's principal trading partner, the United States also has taken the most active role in the GATT accession proceedings. The U.S. 1992 Memorandum of Understanding (MOU) with China on market access resulted from a U.S. government-initiated trade action under Section 301 of U.S. trade law which identified tariffs, transparency, quantitative restrictions, and standards as import barriers in China's market.

In the area of agriculture, the MOU addressed China's import quotas and licensing requirements, as well as sanitary and phytosanitary restrictions for breeding animals, fresh fruit, wheat, and tobacco. China committed itself to remove quotas and licensing for a number of products, and to put its technical standards on a sound, scientific basis. Since 1992, implementation of the provisions of the agreement on agriculture has been incomplete. While China has made concessions such as agreeing to accept apples from Washington State and has improved the veterinary protocols governing trade in animal breeding stock, the United States does not consider that China has yet put its technical agricultural standards on an objective, scientific basis.

### ***Uruguay Round Agreement in Agriculture***

The adoption of the Uruguay Round Agreement on April 15, 1994, and the consequent founding of the new World Trade Organization (WTO) to replace the 1947 GATT have changed the parameters of China's GATT accession process. The Uruguay Round Agreement brings agriculture fully under GATT rules. Most significantly, it requires the wholesale elimination of nontariff barriers to agricultural trade so that only protection by the use of tariffs will be sanctioned. All GATT members' tariffs are now bound and subject to reduction, and all countries will allow at least minimum access to their markets for products previously restricted by non-tariff measures such as import quotas, bans, or licensing. Trade-distorting production and export subsidies are to be reduced and capped, so that increases will not occur in the future. In addition, countries will no longer be able to use phytosanitary and sanitary quarantine regulations to block imports unless there is scientific justification. Violations may be challenged by member countries through an objective dispute settlement procedure.

Even though China is not now a GATT member, the Uruguay Round will mean a bonanza for China's agriculture. With its large-scale exports of agricultural commodities, China will benefit from the worldwide reduction in trade-distorting production subsidies, export subsidies, and non-tariff import barriers. Export opportunities, at least in the short run, will greatly improve for China's cotton, rice, corn, fruits, vegetables, peanuts, meat, poultry, and eggs.

### ***China's Agriculture and the GATT/WTO***

China originally asked for an exemption from GATT disciplines for its agricultural sector on the grounds that China is a developing country. This position was rejected by the Working Party, and China later agreed to include agriculture. In this area, the Working Party has a number of concerns about the extent of China's reforms and about subsidization and market access. China is a major agricultural exporter, selling \$16 billion in 1993, but its agricultural imports are only half that and are especially small in relation to consumption and demand. The major Chinese practices being examined by the Working Party are state planning and state trading, licensing and quantitative restrictions for imports, tariffs, import substitution policies, domestic farm subsidies, export subsidies, foreign currency controls, quarantine restrictions on imported plant and animal products, and food safety standards.

### ***China's State Planning, Import Quotas, and Licensing***

The crux of the problem in aligning China's economic system with GATT/WTO principles is China's governmental involvement in economic planning and trading. China's State Council draws up an annual plan for imports of basic commodities, including wood products, wheat and other grains, soybeans, cotton, tobacco, and sugar. This state plan is a secret document that sets the equivalent of import quotas and is implemented by issuing import licenses only to designated state-owned trading corporations. There are several problems with this system in terms of GATT rules. One is the extent of government control of economic activity and trade. Another



is the lack of transparency. The Working Party has concerns about China's approach to setting import quotas, and about the GATT consistency of operating import licensing through a closed and nontransparent process. The Uruguay Round Agreement eliminated the practice of setting agricultural import quotas altogether and replaced them with protection through tariffs.

China committed itself to phase out quotas and licensing for many products in the 1992 MOU with the United States. The first announcement of agricultural quota eliminations was made in January 1994 for fruit. In the Working Party, however, China has also stated its intention to eliminate the quotas, but to continue to rely on state planning for imports of key commodities. The Working Party does not view quotas as being removed when imports of these commodities are still limited by a secret state plan and only state-owned trading corporations are authorized to make the imports. China reports that it has replaced import quotas for grain with a tendering system, but the import decision is still in the hands of the state.

In general, the operation of China's licensing procedures needs to be made transparent and regularized in accordance with GATT/WTO articles and licensing codes. License holders must be chosen according to published, transparent procedures, and their names must be given to GATT. A single office issuing a single license must be designated rather than requiring firms to obtain a series of permits from national, provincial, and local offices.

China has also informed the Working Party that it will cease state planning for imports and exports. Formerly, the annual plan covered two types of imports--products under the mandatory plan for which the central government allocated foreign exchange, and products under the guidance plan for which provinces allocated foreign exchange. The system also designated agricultural commodities for foreign trade purposes as first, second, and third categories. First category products were handled exclusively by designated state trading corporations. Second category products could be traded by corporations and enterprises having overseas trading rights. The third category included products that could be traded by any trading corporations. The fundamental change is that now the trading corporations must rely on their own profits to generate foreign exchange for imports and not on government allocations or subsidies.

### **China's State Trading**

Article XVII of GATT requires disciplines on state trading enterprises to prevent their creating obstacles to international trade. State trading enterprises must conduct trading in a non-discriminatory manner and solely in accordance with commercial considerations. Contracting Parties are required to supply information about their state trading operations, including lists of the type and quantity of products traded, and the mark-up prices for domestic resale of imported products.

State trading is an essentially uneconomic practice because it eliminates competition, and thus, efficiency among producers, thereby raising prices for consumers. Purchasers are not able to contract directly with suppliers for the products they need.

Administration measures can exclude foreign products. On the export side, state trading is expensive for the government and implies export subsidization, in that internal prices are not dependent on pure profit-and-loss considerations.

The Ministry of Foreign Economic Cooperation and Trade (MOFTEC) operates China's large state-owned, foreign trade corporations. These include CHINATEX for cotton and textiles, CEROILS for grain and oils, CHINATUHSU for native products, and the China National Tobacco Corporation. Prior to late 1988, during a period of market reform, all sorts of local entities also became involved in foreign trade, until the government tightened credit in an effort to control the profits and stem inflation. The number of authorized trading agencies was severely reduced. Recently, many more entities have again been authorized to trade in response to the sheer weight of increased import demand. Reportedly, there are now over 7,000 additional trading companies authorized to operate by the Chinese government, in addition to the MOFTEC foreign trade corporations. But there are said to be no strictly private trading companies in China.

Virtually all of China's agricultural exports are handled by the foreign trade corporations, whether at the national, provincial, or local level. China's competitive exports include cotton, corn, soybeans, frozen vegetables, peanuts, eggs, pork, mushrooms, garlic, honey, nuts, and rice. These exports are still government-procured through contracts with farmers. In order to earn foreign exchange, China exports even when supplies fall short of domestic demand. Often, high quality domestic products will be exported, while like products of lower quality and price, such as broken rice or short staple cotton varieties, will be imported for domestic consumption.

According to information supplied to the Working Party, China now requires that the state-owned trade corporations be legally and economically independent, or self-sufficient, in their business dealings, and operate without state subsidies or preferential access to foreign currency. For example, Shanghai Timber is an independent, licensed importer of forest products, although they originally were within the import wing of the Forestry Ministry and part of CHINATUHSU.

### **Tariffs and GATT**

A basic principle of GATT, which was greatly strengthened by virtue of the Uruguay Round is reliance on tariffs as the sole means of protection for domestic markets. The contracting parties will probably require that China reduce its tariffs as a condition of GATT accession. Various countries will negotiate separately with China to obtain reductions in specific tariffs. China's agricultural tariffs are extremely high, for example, tariffs on fresh fruit range up to 80 percent, alcoholic beverages are 150 percent, and wood veneer and plywood are 20 to 38 percent. Even in cases where protectionism is not a factor, tariffs may be high. For example, some raw materials used in Chinese processing industries, such as mohair and hops, are assessed high tariffs.

The GATT Uruguay Round Agreement requires that all tariffs be cut by an average of 36 percent by the year 2000 and that they be bound at a set upper limit. These rates were negotiated among the GATT members in the Round. Under GATT/WTO



rules, a country may not apply rates higher than the bound rates, though they may apply lower rates.

### **Internal Supports and GATT**

The Uruguay Round Agreement requires GATT countries to reduce and cap their subsidies to farm production. China will have to provide full information about its domestic farm support policies to the Working Party, including the value of assistance to agriculture and price data for producers and wholesalers. Since China's currency is not convertible, however, it will be difficult to assess the degree of subsidization. China's high import duties and many protectionist measures indicate a fear of competition from lower-priced imports and a concern about price fluctuations when internal markets are exposed to world markets. Studies to date show that, despite the high tariffs, producer support may be negative. Farmers are in a sense taxed or penalized when they sell products to the government at a contract price in order to provide commodities to urban residents at low prices. The counterpart of a negative producer subsidy is a positive consumer subsidy—the opposite of the negative consumer subsidies which prevail in the European Union, Japan, and the United States.

Many of China's internal commodity prices may be approximately on a par or even lower than world market prices, at least before taking into account the effects of subsidized inputs such as irrigation water, land, seed, fertilizers, transport, and marketing assistance. Other types of assistance to the agricultural sector for capital investment in research, training, disaster relief, and environmental programs are not subject to discipline in the Uruguay Round because there is no direct impact on commodity prices.

With China's market-oriented reforms leading toward a market-based economy, the role of the government in procuring and pricing agricultural products has gradually diminished, along with the phaseout of rationed low-price food in cities. Subsidies through supplying low priced inputs also have been reduced.

### **Export Subsidies and GATT**

A major goal of the Uruguay Round was to reverse the trend toward distortion of agricultural markets brought about by competing export subsidies. The reduction in export subsidies was a crowning achievement of the Round. The agreement stipulates that export subsidies must be capped and decreased by an average of at least 21 percent by the year 2000. China's export practices will be closely scrutinized as part of the accession process, particularly since China's agricultural exports are so important.

By revising its accounting system for foreign trade, China was able to claim that it had eliminated direct export subsidies as of January 1, 1991. But there was no evident change in China's export volume and product mix at that time. China's agricultural exports must still be judged to be subsidized inasmuch as the government plays a major role in the procurement, pricing, and trading of agricultural commodities. As long as inputs such as seed and fertilizer are provided without cost or at favorable prices, land is not bought and sold or uniformly taxed, currency is nonconvertible, transpor-

tation and marketing services are provided at highly subsidized rates, and export sales are made by state trading monopolies who can exchange foreign currency at a preferential rate, the export prices must be distorted and noncompetitive. Simply put, China procures farm products for export at below market prices.

These policies are, again, very difficult to measure as long as internal and trade price data are not available and China's currency is not freely convertible. Implementation of China's new, unified exchange rate should allow formulation of sufficient price data to measure export subsidies with reasonable accuracy for the first time. For now, the Chinese Government still controls exchange rates and manages access to foreign currency, so internal prices cannot readily be compared with world prices. It is reasonable to infer that export subsidies correlate with domestic support to producers and the practice of state trading. China's system of exporting shows many opportunities for subsidy.

One crop that appears to be highly managed and subsidized is cotton. China is the world's largest producer. Depending on domestic supply and demand conditions, it can be either a major world exporter or a major importer of cotton. The basic system is that cotton farmers contract with the provincial bureaus of the Ministry of Internal Trade to sell their crop at a set price. Seed and fertilizer are provided at subsidized rates. Cotton that is exported is handled by the state trading corporation, whose operations are subsidized by the government.

### ***China's Currency and Exchange Rate***

It has been difficult to measure China's subsidization of agricultural production and exports because there is no convertible currency with which to compare internal and world prices. Certain prices are still administratively set, while others have been deregulated and allowed to seek their market level. Full information is not available about wholesale prices or about the markups on state-traded imports.

In a bold reform prompted by the International Monetary Fund and the GATT Working Party, China announced January 1, 1994, that its currency exchange rate would be unified so that China's unique foreign exchange certificates would no longer be circulated. The single exchange rate is to be allowed to float, subject to guidance by the central bank, and the initial exchange rate was adopted as RMB (Renminbi) 8.7 yuan to U.S. \$1.00. Progress on adoption of the new system has been uneven so far, and China's new, single currency is still not classified as a convertible currency.

### **Sanitary, Phytosanitary, and Food Safety Standards**

GATT members have expressed concern that China may resort to health-related standards, inspection procedures, building codes, or quarantine regulations to keep out imported food and wood products. China's practices were cited by the United States in the 1991 Section 301 case on market access. That case has not yet been satisfactorily resolved with regard to standards issues. Extra assurances may be requested as part of the GATT/WTO accession process to ensure that market access will not be hindered by standards problems.



The GATT standards code stipulates that technical requirements can not be used as disguised barriers to trade. The Uruguay Round Agreement requires that all such measures that affect trade be based on sound science. GATT member countries are expected to adopt international standards for the protection of human, animal, or plant health, and they also have the right to set their own standards based on a scientific justification or determination of acceptable risks. Under the Uruguay Round accord, countries may use the improved GATT dispute settlement system agreed to in the Uruguay Round to challenge the standards of other countries.

The GATT recognizes the competence of three international scientific organizations to establish standards that are presumed to be valid. These organizations are the Codex Alimentarius (CODEX), International Office of Epizootics (OIE), and International Plant Protection Convention (IPPC), which are committed to preventing health measures from being used as trade barriers. China has made encouraging statements in Working Party meetings that it intends to adhere to the conventions of these bodies, and to accept the GATT Codes on Technical Barriers to Trade and the Sanitary and Phytosanitary provisions adopted by the Uruguay Round.

The Uruguay Round agreement sets out important principles with regard to quarantine matters. These are transparency, pest or disease free areas, risk analysis, acceptable level of risk, equivalency, and accreditation. Transparency is the first and key problem. GATT/WTO accession would require that all of China's official procedures and regulations be published. Changes must be announced in advance through the relevant international organizations, and there must be a period for public comment. Enforcement must be consistent throughout the country.

The second essential concept, particularly for such large countries as China and the United States, is pest-free or disease-free areas within the political boundaries of a country. For example, not only would the state of Hawaii be considered as a separate zone from the continental United States, but zones within the continental United States, could be designated as pest or disease free. The principles of the international conventions also require that the scientific methodology known as risk analysis must be the basis for a country's standards. Tied in is the concept of an acceptable level of risk whereby countries would determine what constitutes a safe standard, such as a treatment method whereby 3 fruit flies out of 100,000 survives rather than insisting on zero survival. China has pledged to adopt risk analysis principles.

The fourth principle, equivalency, implies that China accepts other countries' objective demonstrations of measures appropriate for animal or plant health protection. This implies that, for example, to admit fresh tree fruit, countries could accept a systems approach of orchard management in lieu of constant inspections as an equivalent treatment for any plant pests of concern.

The question of accreditation with regard to credentials and training of quarantine scientists has been a difficult one. More information is needed on China's training process for quarantine officials so that there will be a common basis for evaluating decisions based on sound science.

Another important area for agricultural trade is food safety. GATT disciplines would also apply to approval procedures for new food additives and to setting tolerances for chemical residues in foods in accordance with CODEX fair practices.

### ***Potential Implications of China's Accession to GATT***

As discussed above, the impact of joining GATT on China's agricultural sector depends on the relative value of world and domestic prices for various farm products, changes in China's exchange rate, the level of tariff reductions or tariff rate quotas, and the degree to which China reforms its plan-controlled trading system. More precise estimates of the impacts on Chinese and world agricultural trade will not be obtainable until the country is admitted to GATT. Issues on China's trade reforms, convertibility and unification of dual exchange rates, market accessibility, elimination of non-tariff barriers, and implementation of tariffication and tariff rate quotas are still being negotiated between China and GATT member countries.

Despite the remaining uncertainties, several studies have been carried out. The early publications indicate that China's opening to the world agricultural market will have a significant impact on its domestic market, both in the short and long runs. For decades, China's domestic agricultural market has been insulated from price changes in international markets.

Furthermore, after being admitted to GATT, China will have to let domestic farmers produce many more varieties of farm products or will have to import them to meet changes in the increasingly diversified tastes and preferences of consumers. However, the short run impact of accession to GATT on China's agricultural trade is generally considered to be relatively small compared with the impact on industries, such as automobile manufacturing. There are a number of preliminary impacts on China's major agricultural commodities are.

### ***Little Impact On China's Rice Market and Trade***

China is the world's largest rice producer and is basically more than self-sufficient in rice supply, with a large quantity of rice being fed to livestock, including hogs, and a smaller amount being exported. Studies recently available from China show that China's domestic rice price was lower than the cost, insurance, and freight (CIF) of imported rice and the price of imported rice for domestic delivery. For example, in 1991, the average price of imported rice from Thailand was \$285 a ton, or RMB 1.71 yuan per kilogram. Adding 4.4 percent in fees (a 0.3 percent bank finance fee, a 1 percent foreign service charge, a 0.3 customs service charge, a 0.15 percent commodity inspection fee, and a 2.7 percent port construction fee), the domestic delivery price was RMB 1.78 yuan per kilogram. For the first half year of 1992, the similar domestic delivery price was RMB 2.1 yuan. At that time, China's domestic market price for premium quality rice ranged between RMB 1.2 and 1.4 yuan, close to the international market price, but clearly lower than the domestic delivery price of imported rice. The producer subsidy equivalents (PSE's) calculated by the Economic Research Service (ERS) of the U.S. Department of Agriculture are negative (table A-1), in concurrence with the Chinese studies.



Currently, China's imported rice is exempted from customs duties. Therefore, duty reduction or exemption is not an issue. Although China produces a large quantity of rice, the majority is for domestic consumption. In general, China imports about 200,000 to 300,000 tons of rice, and exports 700,000 to 800,000 tons each year. After China is admitted to GATT, China's rice trade is unlikely to change drastically. However, because China produces the japonica rice that is highly prized by Japanese consumers, good-quality Northern rice produced in China may well likely enter into the Japanese market, which was opened by the recent Uruguay Round accord. Thus, China could become a major competitor with the United States in Asian markets.

### Potentially More Wheat Imports In The Long Run

China is not only the world's biggest wheat producer, but also a major wheat importer. Wheat and rice, defined as "fine grains" in China, are consumed as staple foods by most of the population. Before reforms began in the late 1970's, most rural residents, especially in north China, consumed a large part of their diet in the form of coarse grains, such as corn and sorghum.

China's Government has raised wheat procurement prices several times during the last 15 years in order to encourage production. Together with increased irrigation (particularly under-ground water pumping in the China Northern Plains) and more input usage, the higher prices led to a near doubling of China's wheat production from 55 million tons in 1980 to about 106 million in 1993.

Since most of the increased wheat production remained near where it was produced, rural residents are now consuming much higher levels of fine grains. During the last 15 years, China's wheat imports have continued to hover between 10 and 15 million tons, except for 1986 and 1993. Imported wheat, reportedly, has gone mainly to flour mills in big cities, where it is blended with domestic wheat to manufacture better quality flour for urban residents.

China's domestic wheat prices in recent years have been higher than international prices. For example, the price of 1991 imported wheat for domestic delivery was RMB 740 yuan per ton in China and RMB 820 yuan for January through July 1992 (1). The price of third-grade white wheat on the grain wholesale market in Zhengzhou, Henan Province, was RMB 860 yuan on average during the same period. This information is in apparent contradiction to ERS estimates of China's wheat PSE's, which are negative in 1991 and even more negative in 1992 (table A-1). The discrepancy arises because the ERS PSE calculations averaged mixed-prices,

including the much lower government-fixed procurement price.

The elimination of dual exchange rates that began in January 1994 should cause China's calculated wheat PSE's to become positive, due to an over-30-percent depreciation in 1993. In the long run, Chinese wheat prices are likely to continue rising in order to encourage production. China's demand for imported wheat is likely to increase over the long run because of future water shortages (stemming from overpumping of underground water), limited areas suitable for wheat production, income increases, and population growth.

### Possible Long-term Effect On China's Corn Trade

China's corn production has increased rapidly since rural reforms began in 1979, shifting China from a net corn importer to a major net corn exporter. China has aggressively exported corn since 1991. The Central Government formed the China National Maize Export Company in March 1994 to control corn exports and to avoid price competition among China's individual corn exporters. China exports a large quantity of corn from the north. South China, where economic growth is progressing very rapidly in places like Guangdong Province, is a corn deficit area. Livestock industries in the south have encountered difficulties in purchasing feedgrains, particularly corn. Meanwhile, China's Government does not permit local governments or private livestock producers in the south to import corn, rice, and wheat from foreign sources.

In 1993, China exported more than 11 million tons of corn, mainly to South Korea, Japan, and Russia. China's corn exports to South Korea in 1992 and 1993 largely displaced the U.S. corn. Once it becomes a GATT member, China likely will be required to allow corn imports as well as exports, similar to the current situation for cotton trade. In the short run, China will be able to expand its corn exports, due to its relatively low domestic prices, especially after the 1994 depreciation of Chinese yuan. But in the long run, China likely will become a net importer of corn, because of the increasing amount of feed needed to support China's burgeoning livestock production, induced by rapid income increases and continued population growth.

### More Significant Impact On China's Edible Oils

As shown by the PSE's in table A-1, China's oilseed prices are generally lower than the corresponding international market prices, though significantly higher than the price of imported palm oil. China does not produce palm oil and uses imported palm oil chiefly for food processing. China has imported a large amount of palm oil in recent years, mostly from Malaysia. In 1991, the Malaysian market price was approximately \$336 a ton. China's c.i.f. price was about \$472 a ton, or RMB 2.8 yuan per kilogram. With a 30 percent tariff and 4.45 percent of other fees added, China's domestic delivery price was RMB 3.8 yuan per kilogram. Although 1992 palm oil prices rose to \$395 in Malaysia and about \$400 in the European market, the delivery price of imported palm oil was still much lower than prices for China's domestically produced edible oils, such as rapeseed oil (1).

Table A-1--China's producer subsidy equivalents for major commodities, 1989-92

	Rice	Wheat	Corn	Soy-bean	Rape-seed	Peanut	Cotton
1989	17	2	-8	-2	21	19	6
1990	-23	-27	-35	-14	10	-19	-18
1991	-56	-11	-66	-25	-3	-63	-23
1992	62	-29	-54	-5	-10	-34	-4

Source: USDA.



With the adoption of the unified exchange rate in 1994, China's imported edible oil prices will now increase slightly. A Chinese study indicates that the volume of imported edible oil could rise to 2.5 to 3 million tons after China is admitted into GATT (1). This predicted magnitude of imports is similar to the forecast made by the ERS baseline studies. Oil imports are expected to rise a lot mainly because China's vegetable oil consumption of roughly 5 kilograms per capita is still very low, about one-half that of Koreans and only one-third to one-fourth that of Japanese or Taiwanese. So in the long run, China will likely import more edible oils to meet the demand induced by higher income and population growth.

### **Little Impact On China's Cotton Market and Trade**

China imported as much as 893,000 tons of cotton in 1979/80. In the mid-1980's, rapidly increasing area and yields shifted the country to a net cotton exporter until 1989/90. During that time international cotton prices fluctuated widely. In the late 1980's, pure cotton clothing and goods were popular throughout the world, cotton supply was tight, and prices rose. Since 1990, world cotton production has greatly increased and, by the end of 1991, for a short period, the price of cotton again fell. However, the price of cotton on the international market began rising again in the first half of 1992 and has since remained higher than China's domestic price. A price comparison is reconstructed in table A-2:

When import prices in table A-2 are compared with the supply price for China's domestically produced cotton, 516 yuan per 100 kilograms in 1989 and 658 yuan per 100 kilograms from 1990 to 1992, it is evident that domestic prices have fallen far below international prices since the late 1980's. This trend is generally consistent with the PSE's estimated by ERS (table A-1). The 1994 exchange rate unification which depreciated Chinese yuan further, would make the international prices higher still. Assuming international prices do not plunge, China's domestic raw cotton market is not expected to be affected by the international market, at least in the short run, after China is admitted to GATT. In the long run, China may need foreign cotton for the continued development of textile exports together with textile production to meet increased domestic demand.

Table A-2--Comparison of cotton prices

	Import price	Yuan equivalent	Domestic delivery price of imports	Domestic supply price
	\$/ton c.i.f.	100 kg/1	Yuan/100 kg/2	Yuan/100 kg
1989	1,385.9	720.6	814.0	516
1990	1,658.1	862.2	974.2	658
1991	1,702.0	936.2	1,057.8	658
1992 /3	1,581.7	949.0	1,072.4	658

/1 Exchange rate for 1989 was 1:5.2; 1990 1:5.3; 1992 1:5.5; and 1992 1:6.0. /2 Includes various added taxes and fees. /3 From January through August.

Source: (1).

In conclusion, among major agricultural commodities, only wheat and edible oils may have their trade affected in the short run after China's accession to GATT. The unified exchange rate that began in January 1994 will likely reduce the impact. In the long run, China will likely import more wheat, palm oil, and possibly other vegetable oils and cotton.

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## U.S. Expanding High-Value-Product Trade to China

Joel Greene

Total U.S.-China bilateral trade has expanded in the 1990's faster than in the 1980's. Agricultural trade has slowed as U.S. exports have declined during the past 4 years because wheat shipments remain well below past peaks. U.S. exports of high-value products have steadily increased because of growing consumer demand for U.S. food products in China's rapidly developing coastal and urban areas. U.S. food exports are expected to rise further as China liberalizes import markets.

China has been one of the fastest growing trading partners for the United States during the past decade. Total bilateral trade has risen sharply since 1983, but the U.S. trade deficit with China has ballooned, and is now second only to the U.S. deficit with Japan. Agricultural trade is a small portion of total trade with China, and its share has declined during the past 4 years. The United States normally enjoys a surplus in agricultural trade, but declining U.S. exports of bulk commodities has led to a deterioration of the agricultural trade surplus in recent years. However, there has been a steady increase in U.S. sales of high-value agricultural products to China. Official U.S. export statistics under-report the amount of U.S. food items entering China because many goods exported to Hong Kong are actually destined for China.

China is an important market for the United States because of its vast potential demand for American goods. Although national per-capita income is relatively low, urban residents have already accumulated considerable wealth, which has created a strong consumer demand for goods. This translates into more demand for consumer food items, a move away from staple foods to a greater variety of meat products, fruits and vegetables, and prepared foods.

Moreover, there are prospects for further U.S. sales of high-value products (HVP) because China reduced some tariffs and eliminated some non-tariff barriers in an effort to qualify for entry into the General Agreement on Tariffs and Trade (GATT). Attaining GATT membership has been a priority since this would allow China to become a founding member of the World Trade Organization (WTO) established by the Uruguay Round.

### China as a Major Trading Partner

China was the United States' sixth largest trading partner in 1993, as total trade surpassed \$40 billion, doubling in just 3 years from \$20 billion in 1990. The trade statistics are based on Bureau of the Census, U.S. Department of Commerce, data. According to the same source, U.S. exports to China have expanded at an annual rate of 15 percent since 1983, rising from \$2.2 billion to \$8.8 billion in 1993. China was the ninth leading destination for U.S. exports in 1993. However, at 30 percent annual growth, U.S. imports from China increased twice as fast, rising from \$2.2 billion in 1983 to \$32 billion in 1993. China was the fifth leading source of imports in 1993. By 1993, the United States had a \$23 billion merchandise trade deficit with China, the second largest deficit after Japan (\$59 billion), and more than double the deficit with Canada (\$11 billion).

The trade deficit with China exploded in the mid-1980's. The United States had enjoyed a trade surplus with China until 1982. This trend reversed in 1983, and the United States ran a deficit in the \$50-70 million range through 1985. In 1986, the deficit exploded to \$1.7 billion, and continued to rise at an annual rate of 45 percent. By 1991, the U.S. trade deficit with China approached \$13 billion and surpassed the deficit with Taiwan, which had been the second largest. The U.S. deficit jumped to \$18 billion in 1992, and again to \$23 billion in 1993.

As economic reforms began to take hold in the mid-1980's, China expanded its trade with the world, and Chinese exports and imports both rose 15 percent annually from 1983-1992. China's plans to modernize its infrastructure has meant increased exports for U.S. manufacturers of machinery and

Table B-1--U.S.-China trade, 1983-93

Item	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
\$ Billions											
All merchandise trade:											
U.S. exports to China	2,173	3,004	3,808	3,106	3,497	5,021	5,755	4,806	6,278	7,418	8,767
U.S. imports from China	2,244	3,065	3,863	4,771	6,293	8,511	11,990	15,237	18,969	25,728	31,535
Balance	-71	-61	-55	-1,665	-2,796	-3,490	-6,235	-10,431	-12,691	-18,310	-22,768
Agricultural trade:											
U.S. exports to China	544	613	157	58	362	759	1,435	814	722	545	376
U.S. imports from China	142	191	197	205	237	279	319	271	328	379	451
Balance	402	422	-40	-146	125	480	1,116	543	394	166	-74

Source: U.S. Department of Commerce, Bureau of the Census.



transportation equipment, which rose to \$5.8 billion in 1993. China's airlines are the fastest growing in the world, and the U.S. aircraft industry has benefited with over \$2 billion in exports during 1992 and 1993. China has launched an expansion of its telecommunications system which will make it a significant market for advanced U.S. equipment in the future. The United States also sold significant amounts of automobiles, industrial instruments, and chemical fertilizers to China.

As China's drive to modernize opened the door to U.S. exports, the economic reforms of the 1980's freed resources in the rural economy to develop China's light industrial sector. Abundant labor resources poured into the labor-intensive light industries with an export focus. In 1988, the United States imported nearly \$5 billion worth of light industrial goods, such as textiles and clothes, toys, footwear, and luggage from China. By 1993, U.S. imports of Chinese light industrial goods totaled nearly \$21 billion, two-thirds of all U.S. imports from China.

The trade patterns have continued during January-March 1994, as the U.S. deficit with China reached \$5.2 billion, \$1 billion higher than in first-quarter 1993. The January 1994 devaluation of the yuan should not have much impact on Chinese exports because most export goods were valued at the lower yuan rate of the swap centers instead of at the official exchange rate. However, improved U.S. economic growth in 1994 will continue to pull Chinese goods in, and is likely to sustain the deficit in the short term. In the long term, the U.S. deficit with China may remain one of the largest, but recent rapid growth in the deficit should slow. China will need to open its markets to goods, services, and capital to modernize, and China's effort to enter GATT should open the markets even further.

### ***U.S.-China Agricultural Trade***

U.S. agricultural exports to China fell \$168 million to \$376 million in 1993, a fourth straight year of decline. U.S. imports of Chinese agricultural goods reached a record \$451 million, compared with \$379 million in 1992. For the first time since 1986, the United States ran an agricultural trade deficit of \$74 million with China. The United States' agricultural trade surplus has eroded as China has imported less wheat because of record wheat harvests. Between 1990 and 1993, U.S. wheat shipments to China declined an average of 18 percent annually, while total U.S. agricultural exports declined 23 percent. During the same period, U.S. agricultural imports from China increased an average of 19 percent, accelerating from 7 percent annually during the 1980's.

China is a major producer of agricultural commodities and its policy is to be a self-sufficient food supplier. China tends to import U.S. bulk commodities when there is a domestic shortage, so future sales will be determined largely by China's annual crop situation. China is also a major supplier of such agricultural commodities as mushrooms, waterchestnuts, and garlic in the U.S. market, and this will likely continue. If the current trend in U.S.-China agricultural trade balance continues, agricultural trade disputes are likely to erupt more frequently. However, there is a possibility the United States could improve its usual agricultural trade surplus position

because China is expected to become a bigger market for U.S. agricultural high-value products.

### ***High-Value-Product Exports Continue To Gain***

China has experienced some of the highest growth rates of any country in the world over the last few years. During the past decade, real gross domestic product grew at nearly 10 percent annually. This economic boom means rising disposable incomes and a shift in diet from staple commodities to more meats, a variety of fruits and vegetables, and prepared foods. The trend has begun in the coastal areas and urban centers and is expected to gradually extend into rural areas.

The wide range of high-value products (HVP) can be classified as either intermediate commodities, such as cattle hides, baby chicks, and seeds, or consumer foods, such as meats, tree nuts, and prepared foods. In previous years, most HVP commodities shipped to China were intermediate products. But in 1993, the United States exported almost as much consumer food as intermediate commodities. However, capturing an accurate picture of HVP trade with China is especially difficult because many goods shipped to Hong Kong eventually end up in China.

One of the main problems in measuring trade with China is the way goods transshipped through Hong Kong are recorded. The United States records an export based on its country of final destination, but China has recorded shipments bound for the United States that transit Hong Kong as exports to Hong Kong. China also records goods entering China via Hong Kong as an import from Hong Kong which substantially lowers the exports from the countries of origin.

More importantly for U.S. HVP trade, some U.S. goods are never recorded as an export to China because the trade is conducted through Hong Kong traders with established trade connections in China. China might then report the product shipped via Hong Kong as an import from the United States or from Hong Kong. Depending on how China records the imported product, the U.S. export data can be either higher or lower than the Chinese import data. Although impossible to quantify, a complete accounting of American foods shipped into China is further distorted because trade barriers--high tariffs, phytosanitary regulations, and quotas--create profitable incentives to smuggle goods into China.

Evidence that more American food products enter China than officially recorded shows up in Hong Kong's statistics of U.S. agricultural commodities that are re-exported to China. A comparison of 1992 Hong Kong re-export statistics of five U.S. goods (chicken meat, beef offal, pistachios, almonds, and raisins) to China, Chinese customs import data, and official U.S. export statistics to China is revealing. The United States reported an export value of \$11 million for these five commodities. China reported importing \$46 million worth, and Hong Kong reported re-exporting \$60 million worth (5). In addition, Hong Kong reported re-exporting \$25 million worth of U.S. ginseng to China in 1992, while U.S. data indicated only \$770,000 worth exported to China. It is clear that some U.S. HVP trade has been substantially under reported, and there is considerably higher demand for U.S. food items in China than is reflected in official trade statistics.



According to official U.S. export data, China was the 35th largest market for U.S. exports of high-value products in 1993 at \$73 million. HVP shipments in 1993 were second to 1980 shipments when China purchased \$57 million worth of soybean oil which pushed HVP exports to the record \$88 million. Although HVP export value is relatively small compared with bulk trade, China has been an expanding market for U.S. HVP commodities, and the trend is likely to continue. HVP exports have grown by nearly 29 percent annually since 1983, and accelerated in the 1990's to 47 percent. Furthermore, China would already be a top-twenty market for U.S. HVP commodities if the goods transshipped through Hong Kong were recorded as U.S. exports to China. Just adding the estimated value of the six commodities mentioned above would have placed China as the 15th leading market for HVP goods in 1992.

The highest valued HVP commodity shipped to China in 1993 was chicken meat, primarily parts, which jumped to \$17 million on shipments of 27,000 tons. It is likely that chicken meat is also one of the most under-reported U.S. exports to China. In 1992, Hong Kong re-export statistics indicated that \$46 million worth of U.S. chicken meat moved through Hong Kong into China, compared with official U.S. statistics of about \$6 million. Undoubtedly, much more than \$17 million in U.S. chicken entered China in 1993. There is very strong demand for chicken in China, and there is relatively low consumer demand for chicken parts in the United States, keeping export prices low for the preferred chicken meat in China.

Hides and skins were the main intermediate commodity shipped to China. The United States exported \$13 million worth of hides and skins to China in 1993, \$4 million more than the previous year. Cattle hides accounted for most of

Table B-2--U.S. exports, Hong Kong re-exports and Chinese imports of selected commodities, 1992

	U.S. exports to China	U.S. exports to H.K.	H.K. re-exports	China imports from U.S.
\$ million				
Chicken meat	5.6	127.0	46.0	28.5
Beef offal	.7	1.4	.7	.9
Pistachios	4.9	20.0	9.4	15.1
Almonds	--	8.4	1.9	.8
Raisins	0.0	4.6	2.3	.4
Ginseng	.8	92.9	24.9	na

na = not available. -- = negligible.

Table B-3--Major U.S. HVP exports to China, 1992-93

	1992	1993	% change
\$ million			
Chicken meat	5.6	17.2	208
Cattle hides	6.2	10.4	66
Baby chicks	9.2	7.8	-15
Pistachio nuts	4.9	6.6	35
Sausage casings	2.8	4.8	71
Essential oils	1.2	2.1	82
Beverage preps	2.0	2.1	9
Variety meat	.8	1.7	96
Chocolate	.1	1.6	1,265
Vegetables	1.6	1.5	-6

Table B-4--U.S. bulk and HVP exports to China, 1984-93

	Bulk	HVP	Total
\$ million			
1984	581	32	613
1985	120	37	157
1986	31	27	58
1987	320	42	362
1988	727	32	759
1989	1,401	34	1,435
1990	791	23	814
1991	682	40	722
1992	489	56	545
1993	303	73	376

Source: Foreign Agricultural Trade of the United States, Calendar year supplements, ERS, USDA.

the shipments, about \$10 million in 1993, and were destined for China's large leather industry. However, shipments have fallen from the highs of the mid-1980's; shipments were \$30 million in 1985. U.S. baby chick exports surpassed \$1 million in 1985, and steadily rose until 1992 as China expanded its poultry industry. In 1993, U.S. baby chick exports fell to \$8 million from a record \$9 million the previous year.

Another intermediate commodity for which exports grew in recent years was preparations for soft drinks. U.S. exports topped \$2 million in 1993, after reaching \$3 million in 1991 and declining to under \$2 million in 1992. U.S. essential oil exports, primarily citrus oils and peppermint oil, jumped to \$2.1 million from \$1.1 million in 1992. Seed exports totaled \$1.3 million in 1993, \$200,000 less than in 1992, and half that of 1989. However, the demand for forage grass seed is expected to increase in China because of expanding livestock herds, and for specialty cash crop seed, which could lead to a rebound in U.S. seed exports.

On the consumer side of exports, the United States shipped a record 900 tons of meats, mostly beef offals, valued at nearly \$1.7 million in 1993. But it is likely that much more U.S. beef enters China through Hong Kong. The United States also exported record amounts of chocolate (\$1.6 million), spices (\$860,000), and wine and beer (\$540,000) in 1993.

The largest group of consumer food exports was fruit, vegetables, and tree nuts. The United States exported a record \$9.6 million worth of fruits, vegetables, and tree nuts to China in 1993. The value of these shipments was 42 percent higher than in 1992. The largest single horticultural commodity exported by the United States was pistachios, valued at \$6.6 million, 35 percent higher than in 1992. Many of the pistachios shipped to China have been cracked and then re-exported back to the United States. However, there is growing consumer demand for pistachios in China, and a growing percentage of U.S. exports are being consumed in China.

U.S. vegetable exports totaled \$1.5 million, down about \$100,000 from the record shipments of \$1.6 million in 1992. U.S. exports of frozen french fries have rapidly grown during the last 3 years as the Western fast food sector has expanded in China. The export value of frozen french fries totaled nearly \$245,000 in 1993. Other commodities exported include sauces, starches, and mixed vegetable juices. There are few fresh vegetables shipped to China from the United States. Only \$13,000 in fresh mushrooms in 1993, while in past years



small amounts of asparagus, cabbage, and onions were shipped.

The United States exported \$238,000 worth of fresh fruit to China in 1993, even though China prohibits imports of American fresh fruit because of supposed concerns about Mediterranean fruit fly contamination. U.S. fruit exports (including juice) totaled \$829,000 in 1993, of which \$187,000 was canned fruit, and nearly \$245,000 was fruit flour and meal used in the food processing industry. Fresh fruit exports consisted of apples (\$99,000), grapefruit (\$96,000), oranges (\$22,000), and grapes (\$14,000). The primary canned fruit shipments were peaches (\$66,000) and citrus fruit (\$110,000).

In addition to the small quantity of fruit that somehow bypasses China's plant quarantine regulations and shows up in the official trade data, a much larger quantity of American fruit is transshipped through Hong Kong and appears in the marketplaces of Guangdong Province and, to a lesser degree, in other urban centers. Estimates place the trade of U.S. apples through Hong Kong at over \$5 million in marketing year 1992, and over \$2 million worth of grapes. (6) U.S. plums, oranges, and lemons are also available. Demand for American fruit already exists in the Chinese market, and it is likely to expand in the future.

Some of the barriers to further U.S. exports began to come down at the close of 1993. The United States and China signed an agreement in December 1993 allowing exports of Washington State apples. In a further step to liberalize horticultural trade, the Chinese Government substantially lowered the tariffs on apples and other fruit at the beginning of 1994. For example, the tariffs on apples and grapefruit were reduced from 80 percent to 40 percent.

U.S. statistics show that apple exports totaled \$64,000 in the first quarter of 1994, compared with no exports in first-quarter 1993. The gains will likely be gradual, but the first steps are being taken to allow U.S. apple producers to begin to establish a presence in the China market. U.S. marketers are actively promoting their products in China and negotiations are continuing to open the Chinese market for other U.S. fruits.

### **Trade in 1994 and Beyond**

Lower Chinese tariffs for fruit and relaxed regulations on U.S. apples are having an immediate impact on U.S. fruit sales. U.S. HVP sales to China were \$26 million during January-March 1994, 70 percent higher than in the first quarter of 1993, and should continue to rise. U.S. HVP exports will likely show healthy increases through the 1990's because demand already exists for U.S. goods as indicated by re-exports through Hong Kong. As China further liberalizes its trade laws and marketing channels are established, more U.S. HVP exporters will ship directly to China instead of through Hong Kong.

Future U.S. HVP exports to China will depend on China's continued economic growth, and how quickly the Chinese Government implements market reforms. Real economic growth in China is expected to slow through the end of the

decade to about 8 percent, but continue robust nonetheless. The main challenge facing the government will be controlling inflation, which picked up in 1993, in order to sustain real personal income growth.

By the end of the decade, China is expected to substantially increase meat consumption, and will have to import significant amounts of meals and animal feeds for its livestock industry. China will not be able to significantly expand crop output because of its limited cultivated land area and expanding population. As the Chinese diet changes, possibly following the pattern of its Asian neighbors, with increased and varied consumption of meats, fruits, vegetables, and prepared food, there will be increased opportunities for U.S. exports of intermediate HVP commodities and consumer foods.

President Clinton's renewal of most-favored-nation trade status for China removed an immediate impediment to the U.S.-China trade relationship. The outlook for U.S.-China trade will be more influenced by China's accession to GATT. When China joins GATT, it will be required to adhere to the international trade laws of the organization. China would have to add more transparency to its trade laws, accept minimum market access, abide by sanitary-phytosanitary guidelines, and reduce or eliminate export subsidies as defined under the Uruguay Round Agreement. China's future trade policies will have to reflect the GATT regime, which should open the Chinese market to more U.S. agricultural products.

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# Vegetable Production and Trade in China

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China is the world's largest producer and consumer of vegetables and is the fifth leading exporter. In 1991, China's farmers were estimated to have produced more than 170 million tons of vegetables compared with U.S. vegetable output of 28 million tons. In 1993, the United States exported \$1.5 million worth of vegetables to China while importing \$103 million from China. In the coming decade, U.S. vegetable exports to China will expand but imports from China will also grow. Competition between the U.S. and China producers and processors for foreign vegetable markets likely will be keen.

## Introduction

The purpose of this article is to alert U.S. business interests about prospects for vegetable exports to China and possible competition with producers and processors in China for the U.S. and foreign markets. U.S. vegetable exports to China rose from \$63,000 in 1986 to \$1.5 million in 1993. U.S. imports of vegetables from China rose from \$53 million in 1986 to \$103 million in 1993. In the 1980's canned mushroom imports from China affected domestic mushroom producers and, recently, large imports of garlic induced U.S. domestic producers to seek assistance from the U.S. Department of Commerce and the International Trade Commission to verify that China's firms were not dumping garlic into the U.S. domestic market.

China is the world's largest vegetable producer and a major exporter. As economic growth in China continues, processors likely will become more efficient in processing, packaging, and transporting raw vegetables and vegetable products. This means that in the coming decade, firms in China could well become formidable competitors in the international market place.

This article provides a snapshot of the major features of China's huge vegetable economy. Policies affecting China's vegetable production and marketing are briefly described. The article draws together published materials on vegetable production in China and makes some preliminary output estimates. The revolution in urban vegetable marketing is briefly described--a dramatic shift from government-owned enterprises dominating the distribution of vegetables to one in which wholesale markets played a major role in moving product from farms to urban consumers.

Agricultural handbooks in China list well over 100 varieties of vegetables (11). Most vegetables familiar to U.S. consumers are raised in China though farmers also grow other varieties such as the yam bean tuber (*sha ge*), Kudzu tuber (*fen ge*), and Buddha's hand melon (*Fou shou gua*--chayote).

According to the United Nations Food and Agriculture Organization (FAO), in 1991, China was the world's largest vegetable producer. Also, FAO agricultural trade data for the aggregate trade code "07" which combines fruit and vegetable trade, shows that in 1991 China's exports totaled \$1.9 billion,

ranking fifth behind France at \$3.4; Italy, \$4.3; Spain, \$4.8; and the United States, \$5.2 billion (20).

## Vegetable Cultivation

Important vegetable types grown in China can be cataloged according to parts of the plants consumed: Leafy vegetables--*Bai-cai*, *Da-bai-cai*, cabbage, spinach, cauliflower, and broccoli; Roots and stems--Irish potatoes, sweet potatoes, yams, carrots, celery, beets, turnips, taro, onions, leeks, and garlic; Fruiting crops--Sweet corn, peppers, soybeans, beans (many varieties), cucumber, eggplant, melon (many varieties), squash, and tomatoes (11).

China's statistical authorities define vegetable output as materials coming from the plants noted above. Generally, Irish and sweet potato output is excluded as a vegetable crop, but is included in grain data (converted from fresh weight to a dry-weight grain equivalent basis using a 5:1 ratio). China's citizens consume potatoes in fresh and dried forms, and it is important to note that a large portion of the sweet potato crop is used as an animal feed (3).

China's authorities designed two different vegetable production policies: one for urban areas and one for rural areas. The Communist Party of China's prime political constituents are urban workers, government officials, and their family members. Government leaders under the direction of party authorities organized a system to provide these consumers with a steady supply of relatively low-priced vegetables. Before 1984, municipal governments in medium and large cities organized vegetable companies under the Second Commercial Bureau which signed vegetable delivery contracts with production teams or brigades in mostly sub-urban communes. Municipalities pursued self-sufficiency strategies by directing vegetable companies to purchase most of their vegetables from specialized vegetable production teams (brigades) on the outskirts of the city, and seasonal vegetables from production teams further out from the core city but still within the administrative boundary of the city. From 1957 to 1984, few vegetables were shipped across provincial and municipal boundaries (13).

With the breakup of the commune system in 1984, urban vegetable companies continued to sign delivery contracts with village and township economic cooperatives (11). For example, in 1992, commercial producers in Liaoning province



cultivated 43.2 percent of total vegetable area in the province and produced 52.6 percent of the output (8). At the same time an increasing portion of the urban vegetable supply came from households producing for markets.

In stark contrast to the policy for urban areas, where considerable administrative and financial resources were allocated to ensure vegetable supplies for urban residents, the government took practically no responsibility for supplying vegetables for rural consumers. If rural consumers wanted vegetables, they had to raise their own or purchase them in local markets. When communes were organized in 1958, local cadres allowed households to cultivate small plots of land around their residences to raise vegetables, fruits, and nuts. In the 1960's and 1970's, the average household had a private plot of about 300 square meters (5). With the breakup of the commune system in 1984, rural authorities continued to allow households to cultivate their private plots, which by 1991 averaged 500 square meters (14). Currently, farmers raise a wide variety of vegetables for their own consumption and for the open markets.

The implementation of the land contract system in the early 1980's gave households more freedom to decide what crops to plant. At the same time, authorities allowed rural and urban open markets to reopen. These markets, along with the freedom to raise specific crops to maximize profits, led farmers to increase the area sown to vegetable crops. Farmers produced vegetables for their own use and also delivered products to local open markets in villages and towns to earn cash. For example, in 1992, 56.8 percent of the vegetable area in Liaoning province was cultivated by either self-sufficient producers or by farmers who produced for themselves and for the market (8).

During the 1980's and in the first few years of the eighth 5-year plan (1991-95), farmers planted many new varieties of vegetables developed in China and imported from other countries. In the same period, the agricultural extension system published and distributed booklets to farmers on how to grow various kinds of vegetables. For example, officials in Shanghai published a booklet on increasing the output of garlic.

The area covered by plastic sheeting rose from 2.1 million hectares in 1986 to 3.5 million in 1990. Vegetable growers lay strips of plastic sheeting on the soil and insert plants through the film to raise soil temperatures, retain moisture, and reduce weeds. Plastic sheeting has also been used by farmers to construct plastic sheds for green houses (18). Output of plastic sheeting rose from 331,000 tons in 1990 to 406,000 tons in 1991 (22).

### Production Estimates

According to State Statistical Bureau (SSB) data, farmers substantially increased the proportion of area sown to vegetables from 1.85 percent of total sown area in 1970 to 5.3 percent in 1993. Vegetable area increased from 2.7 million hectares in 1970 to 7.9 million in 1992, an increase of 192 percent. In 1993, farmers expanded vegetable area by 903,000 hectares, an increase of 12.9 percent.

It is possible that actual area sown to vegetables is larger than that reported by the SSB. Recent studies have shown that actual cultivated land in China has been underreported by as much 30 to 40 percent (6). Central and local authorities traditionally have gathered little data on vegetable production. In contrast, authorities collect detailed data on area, yield, and production of all the major grain crops. It is likely that local officials counted only commercial vegetable area and overlooked vegetables grown in private plots and in unregistered land. For these reasons, vegetable area may be considerably more than reported in the press.

In 1993, Ministry of Agriculture officials for the first time reported that vegetable output, reached 220 million tons, up 4 percent from 1992 (10). These data, along with SSB sown area estimates, highlight the situation for the past 3 years (table C-1).

Prior to these recent disclosures, authorities did not publish statistics for total vegetable output. However, for the last two decades, China's State Statistical Bureau has conducted annual rural household income and expenditure surveys. While the results of the past surveys were published, often the data were highly aggregated. But in 1992, the SSB published *Zhongguo Nongcun Juhu Diaocha Nianjian, 1992* (China's Rural Household Survey Yearbook, 1992), which included national and provincial details on vegetable production, consumption, and marketing for the first time (14). With this new source one can estimate vegetable output by multiplying per capita vegetable production data listed by province by the appropriate population numbers. Using this methodology, China's vegetable output for 1991 is estimated at more than 209 million in 1991 (table C-2). The rural survey estimates probably exclude vegetables grown in urban areas by non-farm residents and might exclude vegetables grown on state farms and by military units.

To put these numbers into perspective, let us compare U.S. vegetable output with that for China. In table C-2, China's vegetable production data is arranged in the same format as that for the United States. With a huge land mass and enormous agricultural labor force, China has a vegetable output six times larger than that for the United States. China's Irish potato crop is more than 8 times larger and its sweet potato crop is more than 10 times larger.

On a gross tonnage weight basis, China's largest vegetable producing areas are located in the southwest, north, and central regions. From table C-3 one can quickly see that there is great diversity among the provinces, with Sichuan producing

Table C-1--Vegetable area, yield, and production, 1991-94

Year	Area	Yield	Production
	1,000 ha	Tons/ha	Mill. tons
1991	6,546.0	26.0	170.2
1992	7,030.5	30.0	211.2
1993	7,934.1	27.7	220.0
1994	8,667.0	na	na

The production number for 1991 is estimated. Area for 1991 is from the SSB yearbook. Vegetable yield for 1991 was assumed to be below those for 1992 and 1993 because of serious floods along the Huai and Yangzi rivers.

Source: (3).

more than 37 million tons of fresh vegetables in 1991, while its high, cold neighbor, Tibet, produced 144,000 tons. Output from Shandong province ranks second with almost 17 million tons, followed by Hunan and Guangdong with 14.9 and 13.9 million tons respectively.

On a per capita output basis, farmers in the relatively dry, cold, and short growing-season areas of north and northwest

Table C-2--U.S. and China 1991 vegetable output compared

	U.S.	China
	Million tons	
Vegetables:		
Fresh market	15.4	NA
For processing	12.7	NA
Total	28.1	170.2
Potatoes /1	18.9	155.4
Sweet Potatoes /1	49.8	516.3
Dry edible beans /2	1.5	(3.0)
Mushrooms /2 /3	0.3	(0.2)
Total	98.6	845.1

/1 China's statistics classify Irish and sweet potatoes as grain crops, not as vegetables. A large part of the sweet potato crop is feed to hogs. /2 ( ) indicates USDA dry edible bean (based on 2.3 million tons of output in 1986 and historical data [1 and 9]). /3 Note that China probably is a large mushroom producer given that in 1991 it exported over 117,000 tons of canned mushrooms and more than 10,000 tons of dried mushrooms (4 and 23).

Source: (15).

China had lower production of 140 to 180 kilos compared with 239 to 330 kilos per person for producers in the south and southwest, where the climate is milder and the growing season is longer. Farmers in the Northeast had the country's highest per capita output with 394 kilos per producer. We are at a loss to explain why this should be so. Why would farmers in the northeast where natural conditions are not that conducive to vegetable output, produce more than their cousins in the south, which has favorable natural conditions? Farmers in the northeast have a short growing season, but farmers produce copious quantities of *da-bai-cai* (*brassica Pekinensis*) which consumers pickle and eat throughout the very long winter season.

Vegetable farmers in the three large municipalities, Beijing, Tianjin, and Shanghai seem to use different production and marketing strategies. For example, farmers in Tianjin with 432 kilos per capita seem to be bent on supplying their city with vegetables, while farmers in Shanghai produced only 169 kilos per person, which suggests that Shanghai counted on getting some of its vegetables from farmers in neighboring provinces.

In 1994, the Minister of Agriculture, Liu Jiang, reported at a national conference on rural work that 1994 plans were to boost farm income and expand output of meat, poultry, eggs,

Table C-3--Fresh vegetable and potato production, by province, 1991

Region and province	Per capita vegetable output	Estimated vegetable output	Sweet potato output	Irish potato output	Total vegetable output	Per capita vegetable sales	Sales as a % of output
	Kilos	1,000 tons	1,000 tons	1,000 tons	1,000 tons	Kilos	Percent
Northeast	394	22737	3425	23525	49687	--	--
Heilongjiang	457	9156	0	15600	24756	156	34
Liaoning	375	8516	2850	725	12091	92	25
Jilin	339	5065	575	7200	12840	76	22
North	180	40918	188925	12550	242393	--	--
Shandong	247	16983	98475	0	115458	116	47
Hebei	188	9905	29075	3575	42555	58	31
Beijing	297	1173	700	0	1873	161	54
Tianjin	432	1662	575	0	2237	226	52
Henan	122	9173	57725	0	66898	43	35
Shanxi	90	2022	2375	8975	13372	53	59
Northwest	140	10888	6300	36475	53663	--	--
Shaanxi	99	2673	6250	8500	17423	38	38
Gansu	96	1821	0	12000	13821	54	56
Nei Monggol	169	2524	50	11975	14549	42	25
Ningxia	165	594	0	1100	1694	94	57
Xinjiang	307	3128	0	1825	3953	197	64
Qinghai	47	148	0	2075	2223	23	48
East	176	24859	87400	2100	114359	--	--
Zhejiang	274	9745	14325	2100	26170	87	32
Jiangsu	137	7256	23900	0	31156	24	18
Shanghai	169	705	0	0	705	71	42
Anhui	147	7152	49175	0	56327	62	42
Central	258	32248	45275	14075	91598	--	--
Hubei	234	9843	15275	11375	36493	38	16
Hunan	286	14916	20800	2700	38416	26	9
Jiangxi	243	7490	9200	0	16690	33	13
South	239	26378	73700	6075	106153	--	--
Guangdong	291	13973	40975	3175	58123	152	52
Guangxi	161	5964	7025	0	12989	38	24
Fujian	255	6441	25700	2900	35041	65	25
Hainan	113	586	5800	0	6386	72	64
outhwest	330	51474	111325	60675	223474	--	--
Sichuan	410	37986	98175	33100	169261	77	19
Guizhou	203	5811	8600	14675	29086	19	9
Yunnan	230	7533	4550	12850	24933	51	22
Xizang	75	144	0	50	194	8	11
National	--	209503	516350	155475	881328	69	30

Sources: China Agriculture Statistics Yearbook, 1992, p. 266; and (14).



milk, fruit, and vegetables. He specifically noted that area sown to vegetables in the outskirts of cities must be maintained, and that a system be implemented to make sure that vegetable land in the suburbs not be taken out of production and used for residence and factory sites (12). For example in June 1994 authorities in Zhejiang province decreed that enterprises which took urban vegetable land out of production must double the replacement land. Moreover they tripled the standard price for vegetable land from \$12,353 per hectare to \$35,294. A spring 1994 survey of crop-sown area suggests that farmers will expand vegetables by 266,000 hectares.

China's farmers are expected to continue expanding the construction of green houses from 1994 to 2000. The new economic environment will tend to reduce waste and force inefficient producers into other lines of economic activity. Total vegetable output to the year 2000 likely will increase. Rising incomes likely will induce consumers to demand fresher, higher quality produce and vegetables with a greater variety. Consumers also will want to consume fresh vegetables over a longer period.

### **Marketing**

The marketing regimens rest on the three different modes of production: self-sufficient, open markets, and government planning. According to rural-sample survey data, agricultural households in 1991 on the average sold about 30 percent of their vegetable output, which meant that about 70 percent was consumed on-farm (table C-2). Sales as a percent of output were high for farmers producing vegetables in the North and Northwest region. Natural conditions for vegetable output were not very good, but urban demand for vegetables was high, inducing farmers to sell more of their output than in other regions. For example, farmers in Gansu province marketed 56 percent of their output, compared with only 16 percent for farmers in Hubei province.

Per capita vegetable sales data are presented in table C-3 from which we were able to calculate sales as a percentage of output. There is considerable provincial variation in vegetable sales. For example, provinces in the Northwest, such as Shanxi, were rather light producers of vegetables, but farmers there sold a very high percentage of their crop off-farm. In contrast, farmers in Sichuan were heavy vegetable producers, but sold only a small percent of their output off-farm. In north China where conditions for vegetable production were relatively not very good, producers sold a relatively high proportion of the crop either in response to demand from urban consumers in free markets or from government-organized purchase mechanisms.

In the late 1980's, small urban centers, county seats, towns, and township centers relied on local open markets for vegetable supplies. Local governments constructed covered sheds and stalls to support the growth of open vegetable markets (6).

Beginning in 1990, vegetable supplies for large and medium cities came from state-owned vegetable companies (*guoying shucai gongsi*) and state-owned vegetable wholesale markets (*guoying shucai pifa shichang*). For large and medium sized cities, state vegetable companies within the Ministry of Commerce signed contracts with counties, townships, and villages

in suburban areas to supply vegetables (23, 12, and 17). In 1991, statistics for 35 large and medium cities showed that these companies purchased 4.7 million tons of vegetables from nearby producers and 1.2 million tons from producers outside their boundaries, which was 12 percent less than in 1990. Retail sales from these companies were down 15 percent from 1990, and per capita supply fell from 230 grams per person per day in 1990 to 197 grams in 1991 (23). In the 1980s, these companies purchased vegetables at a relatively high price, and sold them for relatively low prices with the price differential picked up as subsidy by the government. By 1991, the amount of the subsidy had fallen considerably.

An increasing share of vegetables supplied to citizens in large and medium cities comes from state vegetable wholesale markets. For example, in 1991, these markets handled 35 to 50 percent of all vegetables sold in cities like Changsha, Wuhan, Nanjing, Shenyang, Changchun and Zhengzhou. In the slack season, these markets handled between 70 and 80 percent of the vegetables sold in large-and medium-sized cities. In 1991, total retail consumption expenditures for dry and fresh vegetables totalled 22.25 billion RMB, of which farm retail sales to non-farm residents amounted to 16.34 billion RMB (23).

The State Council supported the development of 40 large markets by granting 50 million RMB in low interest loans to complement the 150 million RMB in capital raised by the cities themselves. More than 600,000 square meters of marketing space was constructed (23). Primary marketing deficiencies include poor transportation systems, lack of cold storage space, shortage of credit, poor packaging, and handling facilities. A combination of government, joint venture, and private business investments will partially overcome some of these difficulties. In the 1990's, we can expect that open markets will become increasingly important. Domestic and foreign firms will purchase packaging and processing machinery to cut spoilage losses.

### **China's Vegetable Trade**

China is a major exporter of fresh and preserved vegetables. Exports rose from 2.2 million tons (\$721 million) in 1986 to 3.1 million tons (\$1.3 billion) in 1992. The 1992 vegetable export items with a value in excess of \$10 million are included in table C-4.

About 65 percent of China's vegetable exports go to Asian economies with large urban populations. For example, in 1992, China shipped about half a billion dollars worth of vegetables to Japan, \$163 million to Hong Kong, \$40 million to Singapore, and \$26 million to Korea. Vegetable exports to Asian markets were largely specialty products like mushrooms, special beans, canned bamboo shoots and asparagus, and edible ferns and fungi.

In 1992, China shipped about 25 percent of its vegetable exports to countries in the EU. Here the commodity mix was dominated by dried potatoes for livestock feed, dried peas and beans, mushrooms and Chinese specialty vegetables such as bamboo shoots. The remaining 10 percent of vegetable exports go to a wide variety of countries in Asia, Africa, North and South America, and the Middle East.



Table C-4--China's major vegetable exports in 1992

Item	Quantity	Value
	tons	\$ million
Canned mushrooms	120,092	147.9
Kidney beans	335,262	118.4
Broad beans	367,594	74.2
Dried sweet potato /1	546,929	72.8
Canned bamboo shoots	65,336	68.2
Garlic	128,200	67.6
Mushrooms preserved in salt water	54,194	61.7
Canned asparagus	39,938	60.4
Other dried vegetables	35,775	59.4
Other fresh and chilled vegetables	178,576	49.7
Other preserved vegetables	93,034	48.8
Other simply preserved vegetables	67,134	46.2
Other dried mushrooms	10,320	45.9
Dried cassava	316,425	40.4
Frozen, other vegetables	37,752	35.9
Mushrooms	9,168	30.8
Mung beans	53,432	30.6
Bamboo shoots preserved in salt water	23,166	26.9
Small red beans (Adzuki)	51,919	26.2
Dried lichens	2,842	23.1
Canned Ketchup	37,433	21.7
Wei cai gan	3,069	21.3
Other starch roots	30,147	21.3
Frozen beans	21,978	19.7
Canned fresh water chestnuts	33,838	17.2
Dried ferns	4,290	15.0
Hei mu er (black wood ear) mushrooms	2,538	13.8
Gan bian beans	46,033	13.2
Dried peas	64,295	11.2

/1 Dried sweet potatoes and cassava used as animal feed.

Source: (1).

In the 7 years from 1986 to 1992, China imported an average of 114,000 tons of vegetables worth an average of \$28.4 million. In 1992, China imported 35,700 tons of vegetables, a little more than 1 percent compared with 1992 vegetable exports. Major import items were dry legumes and dried cassava.

### U.S.-China Vegetable Trade

From 1992 to 1993, the value of U.S. vegetable exports to China decreased slightly from \$1.6 million to \$1.5 million. The largest single export item was frozen potatoes, which increased from 242,000 tons in 1992 to 343,000 tons in 1993. In the coming decade U.S. vegetable exports to China should increase to supply hotel and restaurant demand and to meet the requirements of a growing population, whose incomes are rising rapidly. This growth in vegetable trade will also be conditioned on continued trade negotiations to lower non-tariff and tariff barriers and to regularize phyto-sanitary requirements in the two countries.

From 1992 to 1993 U.S. imports of vegetables from China rose from \$79 million to \$103 million, an increase of 30 percent (table C-6). The largest single vegetable was canned mushrooms valued at over \$21 million. Canned mushroom imports reached \$58 million in 1989 but U.S. import restrictions were imposed because cans from some canneries were contaminated, and imports fell to \$11 million in 1990. China's authorities tightened production controls and canneries had to apply for special licenses to process mushrooms, then canned mushroom imports rose to \$21 million, less than half of the 1989 peak (19).

Also in 1993, there was a sharp rise in garlic imports from China rising from 3,273 tons in 1992 to 24,461 tons in 1993, a 647 percent increase. This rapid increase in imports led U.S. garlic growers to petition the International Trade Com-

Table C-5--U.S. vegetable exports to China, 1992-93

Item	Quantity		Value	
	1992	1993	1992	1993
	Tons		\$1,000	
Fresh cabbage	134	0	32	0
Fresh peppers	18	0	20	0
Frozen sweet corn	35	0	32	0
Frozen potatoes	242	343	167	246
Other frozen vegetables	18	0	32	0
Hops	22	11	139	73
Other vegetables, preparations and preserved	--	--	1,193	1,104
Total	--	--	1,616	1,514

Source: (16).

Table C-6--U.S. vegetable imports from China, 1992-93

Item	Quantity		Value	
	1992	1993	1992	1993
	Tons		\$1,000	
Fresh/frozen beans	36	232	54	307
Garlic	3,273	24,461	2,148	11,886
Onions	37	25	36	15
Peas, including chick peas	3,724	5,169	5,871	7,434
Peppers	12	0	28	0
Potatoes, fresh or frozen	18	0	10	0
Bamboo shoots, preserved	2,395	2,429	2,513	2,513
Bean cake, miso	351	970	670	1,371
Cucumbers, preserved	2	12	2	10
Garlic, dried	2,644	4,478	2,772	4,209
Olives, prep or preserved	8	13	25	46
Mushrooms, canned	11,716	11,944	21,130	20,734
Mushrooms, dried	275	715	3,271	7,146
Onion, preserved	33	620	84	880
Hops	1,412	0	2,428	0
Asparagus, prep	290	818	492	1,489
Water chestnuts	24,152	27,129	15,799	17,949
Beans and peas, dried	1,821	1,999	1,205	1,708
Mustard	12	6	26	7
Peppers and pimentos, prep	12	7	15	9
Total	--	--	78,592	102,726

Source: (15).

mission to study garlic imports from China to see if enterprises in China are dumping garlic into the U.S. market. Recent reports suggest that government authorities in China intend to use a bidding process to limit the number of firms permitted to participate in vegetable exports. For example, more than 1,000 firms participated in garlic exports in 1993, but in 1994 licenses were granted to only 16 firms. With regard to the export of garlic, honey, ramie, and logs officials noted that export firms in China competed with each other to purchase these goods at relatively high prices and then sold the goods at low prices to foreign firms with the result that export prices plummeted resulting in losses for China (24). At present the U.S. investigation is continuing.

### Trade Prospects for the 1990's

In the coming decades, vegetable output in China likely will rise to meet the demand of a growing population with rising incomes. Recently published data from rural-sample household surveys shows that in the early 1990's rural residents with higher incomes purchased more vegetables than their poorer neighbors. State Statistical Bureau analysts calculated income elasticities as shown in table C-7. The analysts noted that in the 1990 decade, demand for vegetables will initially rise very fast and then, as incomes continue to increase, the demand for vegetables will grow at a much slower pace.



Table C-7--Vegetable consumption rises with income

Income class	Quantity consumed in kilograms	Income elasticity
Under 200 RMB	75.97	0.40
Above 1,000 RMB	149.41	0.31
Above 2,000 RMB	164.55	0.10

Source: (14, pp. 168-175).

While rural residents consumed an average of 134 kilos in 1990, these analysts forecast that by 2000 consumption will rise to 160 kilograms (14).

In the past, the emphasis was on planned output targets, but with marketing reforms, consumers are demanding higher quality products and a greater variety of vegetables. The quality of vegetables delivered from farm gate to consumer tables likely will improve substantially.

China has a wide variety of climates in which farmers can raise a wide range of vegetables. While cultivated land resources cannot be expanded greatly, China does have huge reserves of farmers who are already skilled vegetable producers. In the coming decades, we can expect that these farmers will boost output and efficiency.

In 1992, China exported 3.1 million tons of vegetables worth \$1.3 billion. With the introduction of modern processing and packaging equipment, and the development of storage, handling, transportation, and retailing facilities, China could become a formidable competitor in international vegetable markets, but at the same time, China's vegetable imports likely will increase as well.

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# An Introduction to China's Rural Grain Supply and Use Tables

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In 1992, the State Statistical Bureau published the results of a 1991 rural household survey which contained a grain supply and use table. This document sheds light on important relationships between different parts of China's rural grain economy. It suggests that grain production may be underreported, that farmers hold large grain stocks, feed large quantities of rice to livestock, and are using markets to buy and sell large quantities of grain.

## Introduction

China is the world's largest producer and consumer of grains; a major importer of wheat and barley and exporter of corn and rice. In the past, China's statistical officials published grain production and trade data, but they did not publish complete grain supply and use data for the country.

USDA's interest in elements of China's grain supply and use table (hereafter referred to as SU tables) stems from a requirement to understand demand and supply conditions in countries important in world grain trade. From 1949 to 1979, USDA analysts did not estimate all elements of China's SU tables because of the dearth of statistical materials. For example, while we were able to estimate production and trade numbers, we were not able to estimate stocks, food, and feed use for specific grains. But beginning in 1980, China's State Statistical Bureau (SSB) published annual statistical yearbooks that provided much needed detail for analysts to estimate elements of the SU tables for the major grains (2).

Since 1988, three documents have provided new insights into China's grain SU tables. A late 1992 report published in *Caimao Jingji* (*Finance and Trade Economics*) said that 1990 grain stocks were 491 million tons, substantially above Western estimates (3, 5). A 1992 book documented long-term underreporting of China's grain area that could result in underreporting of grain production (4). Most recently the results of a rural household income and expenditure survey not only indicated higher grain production and stocks, but also provided detailed data on consumption, feeding, and marketing patterns. The survey was conducted by the SSB, Rural Income and Expenditure Survey Team, which kept detailed records on 67,410 households (7).

These surveys were initiated in 1955, continued to 1965, ceased during the Cultural Revolution and began again in 1976 (1). Results from previous surveys have been published in different SSB publications (8). What is different about *China's Rural Household Survey Yearbook, 1992* is that, for the first time, authorities published data on grain SU tables and it sheds light on many other facets of China's rural grain economy. Because of limited space, nine supporting tables of data could not be published here, but will be made available to interested readers via the Economic Research Service au-

ofax system (contact Frederick Crook at 202-219-0030 for information).

## Grain Supply

China's statistical authorities define grain as wheat, rice (paddy basis), coarse grains, soybeans, potatoes (grain-weight equivalent using a 1:5 ratio of grain to raw weight), and pulses. The 1991 survey was carried out by the Rural Income and Expenditure Survey Department of the SSB. The survey was national in scope, covering 67,410 rural households in all 30 provinces.

The grain SU tables for rural China can be formalized as an identity equation in which supply equals use. The newly published data contain elements not normally in a SU table and these will be discussed more fully.

## Grain from Collective and Household Operations

According to the survey results, grains came from both collective and family operations. In 1991, a relatively small number of households in the country continued to receive some grain from collective operations, in Beijing, Heilongjiang, Fujian, and Qinghai. These households received grain as payment for labor input, and they received grain subsidies or welfare grain from the collective. The remaining 94 percent of grain supply came from individual-household farming.

A gross estimate of total grain production can be calculated by multiplying provincial-average per-capita grain output by the appropriate agricultural population numbers for 1991.

Summarizing the results of these provincial calculations suggests that in 1991 farmers produced 506 million tons of grain, compared with 453 million tons as reported by the SSB (grain from state farms not included).

## Grain Purchases

"Grain purchases" (*gouru liangshi*) includes grains purchased by households from state-owned grain stores (*liangdian*) at fixed prices, from grain stores as reward grain (i.e., for raising cotton) at fixed prices, from local marts at market prices, and from state-owned grain stores at market prices (7, p. 189).



On average, each rural person received about 26 kilos, or 4.4 percent of their total grain supply, from purchases. Of this amount, farmers purchased 13.5 kilos in open free markets (unheard of 10 years ago), which constitutes about 52 percent of total grains purchased. The remaining 48 percent was purchased from non-market sources. Grain purchase patterns varied widely by province, ranging from 73 percent purchased by rural residents in Shandong to only 12 percent purchased by those in Shanghai.

### Stocks

"Year end grain stocks" exclude the quantity of grain represented in grain coupons (*liang piao*), but include the raw grain equivalent of flour, noodles, milled rice, and grains stored by families (7, p. 189). The notes to the SU table are ambiguous with regard to the precise timing of the year-end date. There is importance to the definition because usually the ending year date denotes that quantity of grain in bins just before the new crop is harvested. The Grain Bureau, Ministry of Internal Trade, functions on an April 1 to March 31 year which includes this concept (3). But we think the rural surveys are completed on a calendar year basis. A calendar year stock

number would give higher stock numbers because many fall grain crops are harvested late in the year, which means that bins are full of new grain for 7 or 8 months before any new crop grain is harvested.

Stocks for all of rural China are estimated at 344 million tons, which is the result of multiplying appropriate provincial-population numbers by the average provincial per-capita stock estimate. This rather startlingly large stock number supports the 491-million-ton stock number reported from China in late 1992. Other components of the 146 million difference between rural household-held stocks and total stocks includes those held by the central government's national grain reserves, by enterprises within the government-owned Grain Bureau, and by other grain enterprises (feed, flour, and grain processing mills).

Published materials summarizing the results of the survey did not address the issue of the quality of grain held in stock by farm households. Authorities generally believe between 7 to 12 percent of grain in stocks are lost because of damage from rodents and spoilage (5). On the other hand, in the last 5 years USDA analysts have inspected more than two dozen on-farm grain storage sites, all showed evidence of good storage practices--dry and clean.

Farm households in many northern provinces have more than a one year's food supply in stocks. Per capita rural stocks are much larger in north than south China with a high of 1,427 kilos per capita in Jilin province and a low of 161 kilos in Hainan in the south (figure 1). Farmers in north China keep more stocks because the probability of crop failure is much higher. There the altitude is higher, the climate cooler, and the growing season shorter. In contrast, the south has lower altitudes, warmer climate, and greater precipitation. Also the growing season is longer, which means that farmers can grow more than one grain crop a year, and the probability of crop failure is lower.

Stock changes are the difference between grain supply and grain use. When the supply is larger than use, there is a buildup in stocks. Conversely, stock drawdowns occur when use is greater than supply. Stock drawdowns occurred in 1991 in only two provinces, Anhui and Ningxia. Flooding in 1991 reduced grain crops in Anhui, and so one would expect stock drawdowns there. All the other provinces registered stock buildups, with the largest increases occurring in Manchuria. In Jilin province, farmers added 382 kilos per rural person in 1991, which is greater than the annual food grain consumption of 304 kilos.

### Borrowed Grain

"Borrowed grain" (*jieru liangshi*) includes grain borrowed from individuals, from collectives, or from state-owned grain stations. In 1991, the rural population, on the average, borrowed 2.03 kilos, 0.3 percent of total supply. Provinces with above-average borrowing included grain-rich Heilongjiang, Jiangsu, and Hunan. Rural residents in municipalities like Beijing, Tianjin, and Shanghai had well-below-average grain borrowing.

Table D-1--Estimates of China's on-farm wheat, rice, and other grain stocks, by province, 1991

Region and province	Total	Wheat stocks	Rice stocks	Other grain stocks
1,000 tons				
Northeast	61,194	4,732	11,370	45,902
Heilongjiang	20,551	3,943	3,002	13,605
Liaoning	19,319	625	4,928	13,766
Jilin	21,324	162	3,440	17,722
North	85,627	39,171	3,864	42,592
Shandong	29,810	14,383	849	14,578
Hebei	19,820	7,866	778	11,175
Beijing	1,588	616	128	844
Tianjin	1,761	550	293	918
Henan	21,450	11,075	1,731	8,644
Shanxi	11,199	46,810	86	6,432
Northwest	33,533	14,659	2,060	16,814
Shaanxi	9,236	3,887	906	4,443
Gansu	7,386	4,208	27	3,152
Nei Monggol	10,888	3,290	386	7,212
Ningxia	1,798	756	509	533
Xinjiang	3,148	180	232	1,120
Qinghai	1,077	723	0	354
East	47,632	8,282	31,254	8,096
Zhejiang	14,184	609	12,107	1,468
Jiangsu	20,347	5,622	11,115	3,609
Shanghai	1,597	207	1,199	191
Anhui	11,505	1,844	6,833	2,829
Central	39,701	2,542	34,160	29,984
Hubei	12,221	2,277	8,462	1,482
Hunan	16,570	214	15,281	1,075
Jiangxi	10,910	51	10,417	442
South	28,582		24,719	3,450
Guangdong	13,753	414	12,020	1,563
Guangxi	8,707	170	7,706	990
Fujian	6,122	11	4,994	896
Hainan	840	233	713	127
Southwest	48,137	7,375	22,592	18,170
Sichuan	29,001	5,099	14,210	9,691
Guizhou	7,044	658	3,452	2,935
Yunnan	10,454	1,101	4,913	4,440
Xizang	1,638	517	16	1,105
National	344,407	77,174	130,019	137,213

Sources: (7, pp. 112-115).



Figure D-1

# Rural Per Capita Grain Stocks, in Kilograms, by Province, 1991



## Return of Loaned Grain

"Return of loaned out grain" (*shou hui jiechu liang*) refers to grain which families originally loaned out to others, but which is being returned in the current year (7, p. 189). The rural population averaged 3.43 kilos per capita of return of loaned out grain, 0.6 percent of total supply. Households in Manchuria had the highest rates of returning grain, 19.5 kilos, compared with rural households in municipalities, which had no grain from this source.

## Grain from Other Sources

"Grain from other sources" (*qi ta liangshi shou ru*) includes grain which has been mailed from an outside location to a rural household, government relief grain, and grain sent by relatives or friends. Nationally the rural population received 2.8 kilos of this kind of grain, which constituted 0.4 percent of total supply.

## Grain Use

Grain use includes food, other food grain use, sales, seed, feed, grain loaned out, return of borrowed grain, grain to meet land contract obligations, and other uses. On a national average basis, rural residents in 1991 had a supply of 616.87 kilos of grain available to them. They used 568.31 kilos which meant that they added 48.55 kilos to stocks.

## Food

"Food" grain (*liangshi*) is defined as all the food grain consumed during one year, including noodles and glutinous rice cakes converted to raw grain (7, p. 189). In 1991, the average rural resident consumed 255.58 kilos of grain as food, 45 percent of total use.

For previous surveys, statistical authorities only published food grain consumption in terms of total and fine grains (wheat, rice, and millet). In this survey, however, authorities published both wheat and rice food grain consumption data by province. Per capita consumption of other grains (coarse grains, potatoes, soybeans, and pulses) has been derived as a residual by subtracting wheat and rice from the total. The newly published data quantifies observations that northerners eat more wheat and southerners eat more rice. For example, in Henan province, 79 percent of food grains consumed by rural residents was wheat. Whereas in Guangdong province, 95 percent of food grains consumed was rice. Other food grain consumption percentages were highest in the three northeastern provinces, and in the relatively poor provinces in the northwest and southwest.

Previous time-series data for rural food grain consumption shows, with economic reforms and rising incomes, rural residents have steadily consumed less coarse grains and increased consumption of fine grains. As rural per capita incomes rise, we expect rural residents to demand greater diversity in grain consumption. Residents in the north will want to consume more rice, and conversely, residents in the south will want more wheat.

Table D-2--Rural food grain use, by province, 1991

Region and province	Total	Food	Wheat	Rice	Other grains	Other food grain uses
Kilos						
Northeast						
Heilongjiang	1,144.8	270.8	111.5	70.4	88.9	13.1
Liaoning	805.0	251.5	27.3	97.8	126.5	2.8
Jilin	1,410.1	304.0	32.8	134.0	137.3	11.7
North						
Shandong	548.1	221.1	181.9	3.3	36.0	7.5
Hebei	503.6	223.8	150.2	8.5	65.1	4.5
Beijing	472.0	191.8	133.0	38.7	20.1	2.8
Tianjin	644.6	232.4	152.5	54.2	25.6	10.6
Henan	481.2	236.6	187.6	17.4	31.6	5.7
Shanxi	407.0	225.6	118.0	3.7	103.9	4.3
Northwest						
Shaanxi	452.4	235.7	149.4	16.8	69.5	4.3
Gansu	426.0	244.1	210.7	1.4	32.0	1.0
Nei Monggol	837.9	283.9	108.5	16.2	159.2	1.1
Ningxia	690.4	279.1	181.6	60.2	37.3	4.0
Xinjiang	625.8	230.6	188.0	12.1	30.4	4.2
Qinghai	418.0	242.2	184.0	0.3	57.9	1.1
East						
Zhejiang	535.3	267.6	9.9	246.9	10.8	10.0
Jiangsu	595.1	282.3	65.4	205.1	11.8	6.6
Shanghai	495.1	276.2	2.4	271.2	2.7	0.0
Anhui	536.9	264.1	88.1	165.5	10.4	3.3
Central						
Hubei	622.1	285.1	29.3	234.3	21.5	5.1
Hunan	609.4	311.1	1.9	303.7	5.5	8.6
Jiangxi	627.1	331.1	1.4	316.9	12.8	11.0
South						
Guangdong	479.5	248.6	0.8	236.4	11.4	3.6
Guangxi	440.2	245.4	1.8	226.7	16.9	4.3
Fujian	441.1	261.4	3.4	234.9	23.1	9.9
Hainan	389.9	227.8	0.0	218.2	9.5	4.3
Southwest						
Sichuan	487.2	253.4	38.5	193.4	21.6	2.9
Guizhou	380.6	237.5	18.8	167.6	51.2	6.2
Yunnan	458.3	224.5	14.8	161.8	47.9	5.4
Xizang	431.9	209.3	64.0	2.6	142.7	45.9
National	568.3	255.6	79.5	134.3	41.8	6.3

Sources: (7, pp. 112-115).

## Other Food Grain Use

"Other food grain use" (*qi ta shenghuo yong liang*) excludes grains which are directly consumed as food, but includes grains used to make noodles, cooking oil from soybeans, and alcohol. Processed products consumed on-farm is counted here, but the part that is sold off-farm is counted in sales (7, p. 189). In 1991, rural residents, on average, used 6.25 kilos of grain to make processed foods, 0.1 percent of their total grain-use budget.

## Sales

"Sales" (*chushou liangshi*) refers to grain that farmers sold during the past year. It includes grain sold to the state, to enterprises (buyers, feed mills etc.), and in local markets. Products that contain grain such as noodles and are sold should be included here on a grain-equivalent basis (7, p. 189). In 1991, farmers sold 180.87 kilos of grain off their farms, 31.8 percent of their total grain supply. Provinces in Manchuria had the highest rate of sales. Heilongjiang province, for example, sold 58 percent of its available supplies. In contrast, farmers in provinces in the southwest, for example, Guizhou, sold only 12 percent of their grain.

More than 64 percent of the grain sold off the farm was to the state with the remaining 36 percent in markets. This



suggests that markets are having a significant impact on the rural grain economy. The quantity of grain affected by markets is greater than that shown here, because one should add to direct sales, a large share of the grain fed to livestock, which is sold in local open markets.

The newly published data allows us to calculate the composition of provincial grain sales to the government. Total sales minus sales to the state equals sales to the market. The sum of wheat and rice sales deducted from total sales to the government allowed us to net out other grain sales to the government. With this data, we were able to calculate commodity-specific sales as a percentage of total grain sales to obtain a picture of provincial grain sales.

With regard to wheat, most of the wheat sold to the state came from the northern wheat producing provinces. For example, 30 percent of Shandong province's sales were wheat, compared with none coming from southern, predominantly rice producing, provinces like Hunan. Note that provinces in the relatively poor northwest region had particularly high percentages. For example, 58 percent of Gansu province's total grain sales came from wheat sales to the government. Perhaps the government had to purchase a relatively high percentage to meet the demand for local wheat rations for urban residents. If it did not purchase a large share of local wheat, then it would have to transport wheat from other provinces, which would be an expensive proposition.

Rice sales to the government came mainly from provinces in south China. For example, 81 percent of Hunan province's grain sales were rice sales to the government.

"Other grain" (primarily corn) sales to the government came from provinces in Manchuria, north, and northwest China. Very little other grain sales came from provinces in south China.

## Seed

"Seed" (*zhongze yongliang*) pertains to that quantity of seed farmers used in a given year, either on collective operations or on their contracted land (7, p. 190). For 1991, farmers allocated 3.5 percent of their available grain for seed. Provincial seeding rates as a percent of available grain was calculated and a few provinces had very low rates. For example, in Jilin province, farmers only allocated 1 percent of their grain supply to seed compared with the national average of 3.5 percent.

## Feed

"Feed" grain (*siliao yongliang*) is defined as that grain actually fed by farmers to all kinds of livestock, and includes grain fed by farmers both on their own farms and in collective operations (7, p. 190). From a national point of view, farmers in 1991 allocated 90.15 kilos of grain to livestock feed, 15.9 percent of total supply.

In the early 1980's, USDA analysts formulated two questions regarding China's use of feed grains. What was the sum total of grains fed to livestock? And second, how much of each kind of grain was fed? In the mid-1980's, USDA analysts used indirect methods to estimate feed grain use (2, 9). The

Table D-3--Rural feed grain estimates for wheat, rice, and other grains, by province, 1991

Region and province	Wheat	Rice	Other	Total grain
1,000 tons				
Northeast				
Heilongjiang	173	96	2,012	2,281
Liaoning	0	113	4,436	4,550
Jilin	0	0	2,907	2,907
North				
Shandong	413	207	8,789	9,409
Hebei	0	145	4,941	5,086
Beijing	10	0	363	373
Tianjin	15	14	398	428
Henan	0	247	3,617	3,865
Shanxi	70	0	1,070	1,140
Northwest				
Shaanxi	0	80	1,720	1,801
Gansu	38	0	928	966
Nei Monggol	75	15	2,346	2,435
Ningxia	14	14	251	280
Xinjiang	20	20	772	812
Qinghai	0	0	133	133
East				
Zhejiang	18	2,027	356	2,400
Jiangsu	212	1,036	3,714	4,962
Shanghai	42	35	166	244
Anhui	0	326	1,947	2,274
Central				
Hubei	844	961	1,227	2,273
Hunan	52	4,873	874	5,800
Jiangxi	0	2,071	0	2,071
South				
Guangdong	0	2,484	962	3,445
Guangxi	0	2,623	716	3,339
Fujian	252	755	281	1,062
Hainan	0	103	104	207
Southwest				
Sichuan	186	0	11,078	11,263
Guizhou	57	0	1,866	1,924
Yunnan	33	164	3,426	3,622
Xizang	7	0	76	83
National	1,546	18,411	61,479	81,436

Source: (7).

survey data, however, provides some direct clues about this important topic. By multiplying provincial feed-grain-use numbers by appropriate population data and summing the provincial results, we estimate that in 1991, China's farmers fed more than 81 million tons of grain. To this estimate, one should add the amount of grain private and joint venture lots used for feed and also the amount of grain the government Grain Bureau system allocated to its own feed lots. This 81 million tons estimated for 1991 compares with a 121 million tons estimated for 1990 by Francis C. Tuan (9, p. 25) and a 102 million tons estimated by Crook (2).

To allocate total feed grain into wheat, rice, and other grains, we listed for each province, grains for food, market sales, sales to the state, other grain uses, and feed. Second, for wheat, rice, and other grains we listed food, sales to the state, and other grain uses of grain from the survey data. "Other grain" is defined here to include corn, sorghum, millet, barley, oats, soybeans, potatoes, pulses, and other grains. "Other grain uses" is defined as the grain used for other food grain use, seed, grain loaned out, return of borrowed grain, rent and tax grain, and other uses. This left the task to estimate market sales and feed.

Several considerations were used to allocate grains among market sales and feed for wheat, rice, and other grains. We calculated provincial ratios of wheat, rice, and other grains



to total provincial grain output for 1991. These ratios were used to estimate the wheat, rice, and other grain supply for each province. These estimates were used as a guide and reference in calculating feed uses for specific grains. For example, it would be illogical to allocate great quantities of wheat to feed use in Hainan province where no wheat is produced by local farmers. From the supply of a specific grain, we subtracted the known elements such as food, sales to the state, and other grain uses. If the balance was close to zero, no grain was allocated to feed or sales to the market. If the balance was marginal, we took 2.5 percent of the balance for feed and allocated the rest to market sales. At the same time, we kept track of how this allocation compared with totals for each grain use category. Several iterations were sometimes necessary to balance the allocation of total feed grain into the component parts.

The survey results can also be used to allocate feed grain among wheat, rice, and other grains. The results of our analysis suggests that farmers fed about 1.5 million tons of wheat, 1.8 percent of total feed grain supplies. This estimate based on surveys is considerably less than the 5 million tons of feed estimated earlier. According to the survey, farmers fed a great deal more rice, 18.4 million tons, 22.6 percent of total feed use. The most popular feed grains were "other grains" (corn, sorghum, barley, oats, soybeans, and potatoes). In 1991, they fed 61.4 million tons of these grains, 75.6 percent of total supply. Again, it should be mentioned that the survey results were for grain fed by farmers, a more restrictive universe of data, compared with earlier estimates which looked at feed use by all users in China.

### Grain Loaned Out

"Grain loaned out" (*jiechu liang*) refers to grain that a household loaned out to individuals, to the collective, or to the state owned grain station (7, p. 114). It is the other part of "borrowed grain" from the supply side of the equation. In 1991, the rural population loaned out an average of 2.38 kilos per capita which was 0.5 percent of total grain use. Provinces with above average lending were grain-rich Heilongjiang and Jilin provinces.

### Return of Borrowed Grain

"Return of borrowed grain" (*guihui jialiang*) refers to that grain households returned in the current year, but which had been borrowed from other households, from collectives, or from the state. In 1991, the rural population on average returned 2.2 kilos of grain, 0.4 percent of total use.

### Rent and Tax Grain

"Rent and tax grain" (*shangjiao jiti chengbao renwu*) refers to that grain which households forwarded to the collective (village economic cooperatives or the village committee) to comply with production-responsibility contract agreements. Households signing land use contracts or various types of production contracts were required by their collectives to deliver specified quantities of grain or other commodities to the collective. This grain was used by the collective to pay agricultural taxes and meet various kinds of financial obligations. In 1991, an average of 3.86 kilos per capita was

allocated for this category, 0.65 percent of total use. On a provincial basis, the survey results differ greatly from one province to another. In Heilongjiang, Jilin, Shanghai, Tibet, and Ningxia, farmers apparently did not allocate any grain to this category, while farmers in Tianjin allocated 34.32 kilos of grain, 5.3 percent of total supply.

### Other Uses

"Other uses" (*qita liangshi zhichu*) refers to that grain households used for other purposes. It includes grain that was put into storage but was improperly cared for, resulting in losses. It also includes grains that families sent to friends and relatives. In 1991, an average of 6.96 kilos of grain was allocated to this category, 1.2 percent of total use.

### USDA Grain Estimates Between a Rock and a Hard Place

Since China's SSB began to publish statistical yearbooks in 1980, USDA recognized grain data in those yearbooks as authoritative. But published reports suggesting that cultivated land has been underreported, total grain stocks are much higher than previously recognized, and grain output may be underreported, have highlighted problems in China's rural statistical system. While these reports emphasized problems in the statistical system, they did not provide enough new data for USDA analysts to revise the China grain series.

Even with these difficulties, China's statistical system still provides the most comprehensive and authoritative information about China's rural economy. Revisions in the grain series can only be made when China's statistical system provides more data. We hope the statistical authorities will soon allocate resources to revise the grain series in order to provide policy makers, producers, processors, and consumers in China with a more accurate picture of domestic demand and supply conditions. The revisions will also facilitate the development of international grain trade because producers and consumers in other countries will have a better understanding of demand and supply conditions in China.

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### Conversion Equivalents and Definitions

China	Metric	Metric	English
1 mu	0.0667 ha		0.1647 acre
15 mu	1.0 ha		2.4711 acre
1 jin (catty)	0.5 kg	.0005 ton	1.1023 lbs
1 dan (100 jin)	50.0 kg	.05 ton	110.23 lbs
1 dun (ton)	1,000.0 kg	1.00 ton	2,204.6 lbs
1 jin/mu	7.5 kg/ha	6.93 lbs./acre	
<b>Crops:</b>	<b>Lbs./bu.</b>	<b>1.0 bu.</b>	<b>1.0 ton</b>
Wheat, potatoes, soybeans	60	0.02722 ton	36.743 bushels
Rye, corn, and sorghum	56	0.02540 ton	39.368 bushels
Barley	48	0.02177 ton	45.929 bushels
Oats	32	0.01452 ton	68.894 bushels
Cotton (480-lb bale)	NA	NA	4.593 bales
Cotton (500-lb running bale)	NA	NA	1.409 bales
1 kilometer equals 0.6213 mile.			
1 mile equals 1.6093 kilometers.			

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Appendix table 1--China's grain area, yield, and production, 1987-93 /1

Unit	1987	1988	1989	1990	1991	1992	1993
Million hectares							
Sown area							
Wheat	28.80	28.79	29.84	30.75	30.95	30.50	30.24
Rice	32.14	31.99	32.19	33.06	32.59	32.09	30.36
Coarse grains	26.63	25.82	26.17	27.01	26.98	26.38	25.81
Corn	20.21	19.69	20.35	21.40	21.57	21.04	20.69
Sorghum	1.86	1.79	1.63	1.55	1.39	1.30	1.34
Millet	2.69	2.51	2.40	2.28	2.23	1.87	2.01
Barley	1.29	1.25	1.22	1.21	1.20	1.25	1.23
Oats	0.59	0.58	0.58	0.58	0.58	0.54	0.54
Potatoes	8.86	9.05	9.10	9.12	9.08	9.06	9.22
Others /2	14.78	14.47	14.39	13.52	12.71	12.53	14.88
Total /3	111.22	110.12	112.21	113.50	112.31	110.56	110.51
Tons/hectare							
Yield /4							
Wheat	2.98	2.97	3.04	3.19	3.10	3.33	3.52
Rice	5.41	5.29	5.51	5.73	5.64	5.80	5.86
Coarse grains	3.51	3.56	3.49	4.13	4.14	4.14	4.52
Corn	3.92	3.93	3.88	4.52	4.58	4.53	4.96
Sorghum	2.91	3.14	2.72	3.67	3.50	3.64	3.73
Millet	1.69	1.76	1.57	2.01	1.79	1.95	2.09
Barley	2.89	3.19	2.93	3.25	2.88	3.20	3.43
Oats	1.10	1.19	1.08	1.17	1.12	1.19	1.19
Potatoes	3.15	3.01	3.00	3.01	2.95	3.00	3.45
Others /2	1.39	1.40	1.25	1.45	1.34	1.36	1.60
Total /3	3.62	3.58	3.63	3.93	3.88	4.00	4.13
Million tons							
Production							
Wheat	85.84	85.43	90.81	98.23	96.00	101.59	106.39
Rice	173.88	169.11	180.13	189.33	183.81	186.22	177.70
Coarse grains	93.57	94.21	93.47	111.68	111.78	109.32	116.74
Corn	79.24	77.35	78.93	96.82	98.77	95.38	102.70
Sorghum	5.43	5.59	4.44	5.68	4.90	5.10	5.00
Millet	4.54	4.41	3.75	4.58	4.00	4.20	4.20
Barley	3.72	6.18	5.69	3.93	3.46	4.00	4.20
Oats	0.65	0.67	0.66	0.68	0.65	0.64	0.64
Potatoes /5	28.13	27.23	27.30	27.43	27.16	28.44	31.81
Others /2	20.53	20.27	18.00	19.57	17.10	17.09	23.80
Total /3	402.04	394.41	407.55	446.24	435.29	442.66	456.44

/1 Data are official figures released by the SSB or the Ministry of Agriculture, except for: (1) 1993 total and individual coarse grain production; and (2) 1993 barley and oats, and other grain area and production.

/2 Consists of soybeans, pulses, and other miscellaneous grains. All of these items are included in China's definition of total grains.

/3 PRC definition.

/4 Calculated from area and production figures.

/5 Converted to a grain-equivalent weight using a 5:1 conversion ratio.

Sources: China Agriculture Yearbook, 1987-93; China Statistical Yearbook, 1987-93; and China Statistics Abstract, 1994.

Appendix table 2--China's 1993 provincial grain, cotton, oilseed crop, sugar crop, and red meat production

Province	Grain	Cotton	Oilseed crop	Sugar crop	Red meat
1,000 tons					
Northeast					
Heilongjiang	18,134	0	161	2,987	671
Liaoning	16,095	19	218	538	1,155
Jilin	17,464	0	268	972	586
North					
Shandong	33,889	410	2,684	40	2,661
Hebei	21,364	192	805	92	1,651
Beijing	2,783	4	38	0	282
Tianjin	1,842	8	44	0	115
Henan	32,220	660	2,045	153	1,801
Shanxi	8,504	70	397	674	395
Northwest					
Shaanxi	10,822	50	408	67	609
Gansu	6,490	13	375	1,046	491
Nei Monggol	9,309	0	726	2,786	659
Ningxia	1,885	0	63	453	73
Xinjiang	6,765	680	370	2,369	341
Qinghai	912	0	152	0	156
East					
Zhejiang	13,496	58	386	792	978
Jiangsu	30,185	429	1,257	332	1,792
Shanghai	2,072	9	132	41	218
Anhui	22,308	260	1,572	187	1,208
Central					
Hubei	21,501	425	1,117	795	1,819
Hunan	24,190	211	791	1,784	2,375
Jiangxi	14,294	156	778	2,311	1,521
South					
Guangdong	14,220	0	672	17,124	1,796
Guangxi	13,865	1	369	23,053	1,328
Fujian	7,301	0	207	2,793	830
Hainan	1,531	0	62	3,816	179
Southwest					
Sichuan	34,399	82	1,339	1,802	4,659
Guizhou	7,359	--	433	231	847
Yunnan	9,365	--	134	9,003	962
Xizang	610	0	18	0	97
Total	405,174	3,739	18,039	76,242	32,255

Source: 1994 China Statistics Abstract. This is the first year in which this publication lists "grains" (guwu) instead of food grain (liangshi). The narrowly defined grain (guwu) seems to exclude soybeans, potatoes, and other grains. Therefore, the provincial grain data in this table cannot be directly compared with tables from previous years.



Appendix table 3--China's oilseeds and cotton area, yield, and production, 1987-93

Item	1987	1988	1989	1990	1991	1992	1993
<b>Sown area:</b>							
	1,000 hectares						
Cotton	4,844	5,535	5,203	5,588	6,538	6,835	4,985
Oilseeds, USDA /1	22,431	21,434	21,929	22,271	23,384	23,825	24,085
Soybeans	8,411	8,120	8,057	7,560	7,050	7,221	9,700
Oilseeds, PRC /2	11,181	10,619	10,512	10,900	11,530	11,489	11,142
Peanuts	3,022	2,914	2,946	2,907	2,880	2,976	3,379
Rapeseed	5,267	4,936	4,993	5,503	6,133	5,976	5,300
Sesameseed	869	704	722	669	680	746	753
Sunflowerseed	887	830	716	713	750	807	na
Other oilseeds /3	1,136	1,135	1,140	1,108	1,087	1,050	na
<b>Yield:</b>							
	Kg/hectare						
Cotton	877	750	731	807	869	660	750
Oilseeds, USDA /1	1,370	1,235	1,200	1,497	1,465	1,377	1,590
Cottonseed	1,490	1,274	1,240	1,371	1,475	1,121	1,278
Soybeans	1,482	1,434	1,270	1,455	1,377	1,426	1,578
Oilseeds, PRC /2	1,366	1,243	1,220	1,480	1,421	1,428	1,619
Peanuts	2,042	1,954	1,793	2,191	2,189	2,000	2,492
Rapeseed	1,254	1,021	1,090	1,264	1,212	1,281	1,309
Sesameseed	605	574	592	701	640	692	na
Sunflowerseed	1,399	1,420	1,486	1,879	1,467	1,826	na
Other oilseeds /3	647	781	605	901	1,020	952	na
<b>Production:</b>							
	1,000 tons						
Cotton /4	4,246	4,149	3,788	4,508	5,675	4,508	3,739
Cotton (1,000 bales) /4	19,500	19,100	18,000	20,705	26,065	20,705	17,175
Oilseeds, USDA /1	33,698	30,615	28,450	33,329	34,526	33,040	38,290
Cottonseed	7,217	7,053	6,440	7,664	9,660	7,664	6,370
Soybeans	12,465	11,645	10,230	11,000	9,710	10,300	15,310
Oilseeds, PRC /2	15,278	13,203	12,820	16,132	16,383	16,412	18,039
Peanuts	6,170	5,693	5,360	6,368	6,300	5,953	8,421
Rapeseed	6,605	5,040	5,440	6,958	7,436	7,653	6,939
Sesameseed	526	404	340	469	435	516	na
Sunflowerseeds	1,241	1,180	1,064	1,339	1,420	1,472	1,250
Other oilseeds /3	735	886	690	998	1,109	1,000	na
Edible veg oil /5	4,636	4,319	4,288	5,229	5,467	5,519	na
Available meal /5	12,113	10,835	10,345	12,583	13,007	13,235	na

/1 Oilseed data published by USDA include only soybeans, cottonseed, peanuts, rapeseed, and sunflowerseed; area includes cotton.

/2 China's total oilseed data exclude soybeans and cottonseed.

/3 "Other oilseeds" are calculated as a residual and include mainly huma (an edible oil-bearing flaxseed) and castor beans; oil-bearing tree seeds are excluded.

/4 Cotton production is on a ginned-weight basis. Bales are 480 pounds.

/5 Available oil and meal are estimated by USDA for the marketing year following harvest by applying assumed crush and extraction rates to production plus net imports. Edible vegetable oil excludes linseed oil. oilseeds crushed include soybeans, cottonseed, peanuts, rapeseed, and sunflowerseed.

Sources: China Statistical Yearbook, 1988-93; China Agriculture Yearbook, 1988-93; and China Statistics Abstract, 1994.

Appendix table 4--China's yearend livestock inventory and product output, 1987-93

Item	1987	1988	1989	1990	1991	1992	1993
Million head							
Yearend inventory:							
Hogs	327.73	342.22	352.81	362.41	369.65	384.21	393.00
Large animals	121.91	125.38	128.05	130.21	131.93	134.65	139.87
Draft animals	71.13	72.19	74.32	76.06	76.82	77.60	80.63
Cattle	94.65	97.95	100.75	102.88	104.59	107.84	113.16
Dairy cows	2.16	2.22	2.53	2.69	2.95	na	na
Water buffalo	21.50	21.65	21.40	21.69	22.01	na	na
Horses	10.69	10.54	10.29	10.17	10.09	10.02	9.96
Mules	10.84	11.05	11.14	5.49	5.61	5.61	5.50
Donkeys	5.25	5.37	5.39	11.20	11.16	10.98	10.89
Camels	0.48	0.47	0.47	0.46	0.44	0.40	0.37
Sheep	102.65	110.57	113.51	112.82	110.86	109.72	111.62
Goats	77.69	90.96	98.13	97.21	95.36	97.61	105.70
Poultry /1	2,039.82	2,261.22	2,268.43	na	na	na	na
Million head							
Number slaughtered:							
Hogs	261.77	275.70	290.23	309.91	328.97	351.70	378.24
Cattle	6.33	8.58	9.43	10.88	13.04	15.19	na
Sheep & goats	56.52	68.27	81.22	89.31	98.16	102.67	na
Poultry /1	1,791.72	2,145.72	2,180.53	na	2,823.58	3,192.50	na
Percent							
Slaughter rate: /2							
Hogs	77.6	84.1	84.8	87.8	90.8	91.5	98.5
Cattle	6.9	9.1	9.6	10.8	12.7	14.5	na
Sheep & goats	34.0	37.9	40.3	42.2	46.7	49.8	na
Poultry /1,3	91.2	105.2	96.4	105.4	113.4	na	na
1,000 tons							
Production:							
Red meat	19,860	21,936	23,262	25,135	27,238	29,406	32,255
Pork	18,349	20,176	21,228	22,811	24,523	26,353	28,544
Beef	792	958	1,072	1,256	1,535	1,803	2,337
Mutton	719	802	962	1,068	1,180	1,250	1,374
Poultry meat	2,020	2,744	2,820	3,229	3,950	4,542	na
Cow's milk	3,301	3,660	3,813	4,157	4,644	5,031	4,987
Sheep & goat's milk	487	529	570	594	599	608	na
Sheep's wool	209	222	237	239	240	238	na
Mohair	13	14	16	17	17	17	na
Cashmere	4	5	5	6	6	6	na
Eggs	5,902	6,955	7,198	7,946	9,220	10,199	11,796

na = not available.

/1 Poultry includes chickens, ducks, and geese.

/2 Slaughter rate is slaughter divided by beginning inventory.

/3 Data for 1990 and 1991 are estimates.

Sources: China Statistical Yearbook, 1987-92; China Agricultural Yearbook, 1988-93; and China Statistics Abstract, 1994.



Appendix table 5--China's major agricultural exports, by volume, 1988-93

Item	Units	1988	1989	1990	1991	1992	1993
Swine, live	1,000 head	3,027	2,980	3,000	2,850	2,900	2,720
Poultry, live	1,000 head	44,180	44,840	47,840	47,520	51,770	51,270
Beef, fresh or frozen	Tons	53,986	56,493	96,593	132,040	30,000	20,000
Pork, fresh or frozen	Tons	63,484	88,423	124,236	116,635	50,000	60,000
Broiler, frozen	Tons	25,660	31,465	37,813	45,395	11,630	94,454
Rabbit meat, frozen	Tons	20,976	21,438	20,545	11,742	17,330	23,051
Eggs	Million	924	753	601	605	635	425
Food grain	1,000 tons	7,180	6,570	5,830	10,860	12,020	13,270
Rice	1,000 tons	700	320	330	690	950	1,430
Corn (maize)	1,000 tons	3,920	3,500	3,400	7,780	10,310	11,100
Soybeans	1,000 tons	1,480	1,260	940	1,110	660	370
Fruit	Tons	280,853	272,557	226,387	163,563	na	na
Oranges	Tons	74,705	70,514	65,624	43,414	61,392	81,047
Apples	Tons	87,859	70,331	62,425	24,082	38,317	119,419
Walnuts, in shell	Tons	8,370	8,684	5,247	4,992	na	na
Walnut meat	Tons	10,608	12,845	8,712	8,245	9,841	17,384
Chestnuts	Tons	35,292	33,296	36,022	33,939	29,138	38,399
Sugar	Tons	247,802	429,623	570,493	343,315	1,670,019	1,853,257
Natural honey	Tons	46,487	71,498	88,005	69,958	91,745	96,538
Tea	Tons	198,290	204,583	195,471	184,872	175,525	201,435
Canned food	Tons	554,176	548,355	565,748	657,660	na	na
Pork	Tons	81,528	86,341	90,906	128,409	53,075	71,511
Vegetables	Tons	333,224	332,143	332,708	340,265	na	na
Fruit	Tons	87,967	71,399	77,825	99,102	na	na
Beer	Tons	39,343	41,753	35,223	43,634	57,140	84,210
Flue-cured tobacco	Tons	19,367	21,931	27,511	60,937	47,850	58,676
Goatskin	1,000 pieces	1,145	7,890	9,140	2,410	310	10
Furskin, raw	1,000 pieces	435	3,800	4,660	1,620	980	2,150
Mink skin	1,000 pieces	174	2,660	2,720	850	620	1,280
Raw silk	Tons	9,404	12,819	7,604	7,919	8,899	8,664
Cotton	Tons	468,002	272,482	167,282	199,980	144,620	149,953
Cashmere	Tons	2,712	2,039	1,413	2,020	na	na
Rabbit hair	Tons	9,735	6,442	4,703	6,419	5,686	5,733
Oilseeds, edible	Tons	510,215	392,080	515,523	572,231	630,000	1,000,000
Peanuts, shelled and unshelled	Tons	251,218	266,066	387,322	427,640	300,000	320,000
Vegetable oil	Tons	25,503	62,099	139,477	99,334	67,846	136,095
Cotton yarn	Tons	205,717	183,656	176,156	187,035	162,945	198,714

na - not available.

Source: China's Customs Statistics, 1988-93.

Appendix table 6--China's major agricultural exports, by value, 1988-93

Item	1988	1989	1990	1991	1992	1993
U.S. \$1,000						
Swine, live	232,910	242,410	270,090	276,350	289,560	271,480
Poultry, live	76,540	76,940	84,530	82,040	93,340	90,340
Beef, fresh or frozen	107,980	105,940	158,740	203,850	38,850	27,850
Pork, fresh or frozen	115,820	159,300	215,480	185,660	76,420	62,670
Broilers, frozen	43,480	55,320	74,390	95,840	22,500	166,240
Rabbit meat, frozen	37,390	34,610	30,080	26,110	46,890	33,690
Eggs	41,130	40,070	28,610	27,820	24,470	15,420
Food grain	1,189,060	1,191,630	1,019,130	1,581,440	1,546,590	1,515,300
Rice	180,980	94,470	84,130	151,830	217,850	252,760
Corn (maize)	393,480	438,810	403,560	864,470	1,219,750	1,153,990
Soybeans	380,970	365,610	228,300	262,210	159,630	101,950
Fruit	125,710	135,365	102,880	78,700	na	na
Oranges	38,300	34,610	31,080	22,600	32,430	37,850
Apples	39,410	27,100	25,590	9,790	20,360	47,960
Walnuts, in shell	8,260	8,650	5,440	4,970	na	na
Walnut meat	23,510	27,160	18,500	19,280	24,320	41,570
Chestnuts	61,420	53,950	62,220	63,100	49,510	78,450
Sugar	62,040	161,400	229,910	120,650	620,050	596,220
Natural honey	37,020	56,140	71,710	61,390	80,060	70,200
Tea	401,970	420,790	412,710	376,060	361,890	355,680
Canned food	649,160	674,260	681,410	787,900	na	na
Pork	143,480	147,540	152,880	193,470	83,980	113,220
Vegetable	353,090	366,540	361,320	364,160	na	na
Fruit	58,730	51,710	53,250	76,670	na	na
Beer	20,640	25,180	19,570	25,920	31,900	41,640
Flue-cured tobacco	41,480	47,660	49,360	118,040	105,030	103,150
Goatskin	42,330	31,500	34,080	8,370	1,560	--
Furskin, raw	51,600	39,120	29,670	15,400	7,490	10,610
Mink skin	37,920	33,990	24,150	11,050	4,360	6,210
Raw silk	308,680	575,090	362,120	336,580	278,660	188,420
Cotton	718,850	431,150	300,540	360,960	210,590	190,070
Cashmere	190,610	194,540	141,740	163,860	na	na
Rabbit hair	230,390	137,320	96,800	105,220	110,250	110,250
Oilseeds, edible	260,260	248,460	352,200	448,470	279,600	407,350
Peanuts, shelled and unshelled	170,220	189,960	271,120	360,270	190,320	196,180
Vegetable oil	17,370	39,460	95,420	76,520	45,950	89,930
Cotton yarn	511,770	424,210	390,200	459,850	391,210	416,270

na - not available. -- - negligible.

Source: China's Customs Statistics, 1988-93.

Appendix table 7--China's major agricultural imports, by volume, 1989-93

Item	Units	1989	1990	1991	1992	1993
Food grain	1,000 tons	16,580	13,720	13,450	11,620	7,330
Wheat	1,000 tons	14,880	12,530	12,370	10,580	6,420
Barley	1,000 tons	245,580	652,429	751,910	828,891	na
Rice	1,000 tons	1,200	60	140	100	100
Corn (maize)	1,000 tons	70	370	--	--	--
Dried beans	1,000 tons	40	30	20	30	na
Soybeans	1,000 tons	0	0	--	121	na
Sugar	Tons	1,580,635	1,132,122	1,013,763	1,100,000	450,000
Coffee & coffee extracts	Tons	6,174	987	1,933	3,289	na
Cocoa beans	Tons	23,980	10,074	30,262	516	na
Natural rubber	Tons	410,668	355,414	306,161	270,000	270,000
Synthetic rubber	Tons	47,044	44,487	84,252	148,199	169,016
Logs	1,000 cubic meters	6,050	4,150	3,970	4,670	3,470
Cotton	Tons	519,039	416,733	370,524	280,000	10,000
Wool	Tons	101,368	33,329	106,243	208,995	237,459
Animal oil & fats	Tons	98,201	93,483	80,012	71,338	na
Edible vegetable oil	Tons	1,056,156	1,122,832	611,887	420,000	240,000
Other vegetable oil	Tons	781,940	1,189,692	1,091,734	650,000	840,000
Fertilizer, manufactured	Tons	13,933,013	16,275,945	18,175,189	18,590,000	10,210,000
Ammonia sulphate	Tons	71,450	163,607	253,203	54,746	na
Urea	Tons	7,940,709	8,146,840	7,005,128	7,480,000	3,610,000
Superphosphates	Tons	141,816	133,853	202,542	215,973	na
Potassium chloride	Tons	1,118,247	2,072,805	2,432,214	2,440,000	570,000
Compound fertilizer	Tons	964,647	4,629,397	7,033,791	6,540,000	3,560,000
Agricultural agent (chemicals)	Tons	36,591	28,487	31,211	39,304	24,061

na - not available. -- - negligible.

Source: China's Customs Statistics, 1989-93.



Appendix table 8--China's major agricultural imports, by value, 1988-93

Item	1988	1989	1990	1991	1992	1993
U.S. \$1,000						
Food grain	1,895,540	2,990,700	2,352,850	1,642,740	1,705,020	1,004,920
Wheat	1,731,040	2,581,200	2,156,530	1,459,540	1,503,730	834,080
Barley	8,640	44,150	109,091	110,236	134,258	na
Rice	na	304,030	11,600	39,840	39,050	34,970
Corn (maize)	12,060	9,270	47,580	130	100	180
Dried beans	11,980	16,480	8,720	6,750	8,206	na
Soybeans	37,080	280	320	260	28	na
Sugar	858,240	429,780	378,880	256,270	255,300	110,940
Coffee and coffee extracts	17,550	17,970	63,200	6,770	4,738	na
Cocoa beans	34,880	35,500	11,900	34,840	942	na
Natural rubber	429,040	376,480	285,530	261,240	230,830	219,800
Synthetic rubber	59,190	54,690	66,860	127,970	176,090	198,050
Logs	899,760	601,860	460,560	454,310	495,540	459,130
Cotton	58,850	708,700	710,790	630,650	429,780	15,980
Wool	895,540	516,870	146,060	350,480	774,060	701,260
Animal oil and fats	50,370	39,930	37,660	29,150	25,713	na
Edible vegetable oils	94,820	498,310	528,270	289,090	195,010	118,290
Other vegetable oils	228,360	341,120	419,040	401,140	258,850	338,210
Fertilizer (manufactured)	2,335,490	2,363,650	2,605,100	3,229,490	3,003,700	1,479,150
Ammonia sulphate	6,920	6,303	11,309	16,780	3,775	na
Urea	1,218,150	1,169,800	1,156,090	1,216,430	1,148,320	457,650
Superphosphates	na	24,010	22,980	32,860	37,626	na
Potassium chloride	na	138,230	243,100	294,242	279,820	130,050
Compound fertilizer	na	215,200	964,860	148,187	1,244,570	594,570
Agricultural agent (chemicals)	156,270	196,200	177,140	183,144	203,650	122,360

na = not available.

Source: China's Customs Statistics, 1988-93.

Appendix table 9--U.S. agricultural exports to China, 1990-93 /1

Item	Fiscal year				Calendar year			
	1990	1991	1992	1993	1990	1991	1992	1993
1,000 tons								
Wheat	3,825	3,650	4,226	2,187	3,692	4,378	2,982	2,717
Corn	442	0	0	0	140	0	0	0
Tobacco	133	0	0	0	133	0	0	0
Cattle hides, whole /2	37	112	162	163	29	159	127	207
Soybeans	0	0	136	61	0	0	136	98
Cotton	191	209	172	--	183	227	133	--
Vegetable oils	--	2	21	2	0	1	20	1
US \$ 1,000								
Wheat	544,030	330,192	369,727	238,252	497,348	363,339	272,951	278,391
Corn	48,560	0	0	0	15,033	0	0	0
Tobacco	938	0	0	0	938	0	0	0
Cattle hides, whole	1,831	4,954	7,341	8,216	1,245	7,196	6,240	10,370
Soybeans	0	0	29,682	13,931	0	0	29,682	22,999
Cotton	289,742	300,581	240,643	158	277,213	318,794	185,943	179
Vegetable oils	593	2,759	9,161	1,454	0	852	7,880	270
Others	23,899	31,421	34,368	60,041	22,236	32,277	41,164	63,791
US \$ million								
Total agricultural	909	668	691	322	814	722	545	376
Total nonagricultural	4,015	5,006	6,188	8,242	3,993	5,516	6,794	8,243
Total	4,924	5,674	6,879	8,564	4,807	6,238	7,339	8,619

na = not available. -- = negligible.

/1 U.S. domestic exports, f.a.s.-value basis. Exports include agricultural product transshipments through Canada.

/2 Numbers in thousands.

Sources: U.S. Bureau of the Census, "U.S. Agricultural Exports," country by commodity, monthly printouts; and USDA, Economic Research Service, U.S. Foreign Agricultural Trade Statistical Report, various issues.

Appendix table 10--China's average \$U.S. exchange rate, 1985-93

Item	1985	1986	1987	1988	1989	1990	1991	1992	1993
RMB/\$US									
Average exchange rate	2.9367	3.4528	3.7221	3.7221	3.7651	4.7832	5.3234	5.5146	5.7620

Source: IMF International Financial Statistics, various issues.

Appendix table 11--Major U.S. agricultural imports from China, by calendar year, 1989-93 /1

Item	1989	1990	1991	1992	1993
US \$ 1,000					
Meats and products, excluding poultry	272	137	239	1,064	1,439
Other meats, fresh or frozen	155	137	237	1,034	1,389
Poultry and products	40,408	39,383	43,691	45,191	34,508
Eggs	1,091	1,886	241	1,280	2,274
Feathers and down, crude	39,287	37,457	43,385	43,856	32,201
Hides and skins	74	770	695	481	223
Furskins	18	387	351	248	83
Wool, unmanufactured, apparel grades	3,511	1,497	1,017	773	4,129
Sausage casings	10,371	4,713	6,845	9,653	10,088
Silk, raw	11,097	7,455	5,420	2,439	1,403
All other animal products	18,085	12,692	11,103	13,278	9,519
Grains and feeds	8,057	6,995	8,760	10,556	13,325
Fruits and preparations	8,158	6,881	14,239	28,978	21,196
Fruits, prepared or preserved	8,021	6,802	14,122	28,787	21,075
Nuts and preparations	10,930	7,718	7,176	12,734	21,719
Vegetables and preparations	97,942	60,294	85,936	78,592	102,726
Vegetables, prepared or preserved	93,643	52,206	75,295	63,019	75,587
Mushrooms, canned	58,941	10,674	24,554	21,130	20,734
Waterchestnuts	15,267	15,168	17,327	15,799	17,949
Sugar and related products	9,575	10,584	19,011	26,874	29,612
Spices	7,159	4,960	2,660	5,243	6,248
Beverages	46,996	6,964	7,437	7,077	7,411
Coffee and products	135	94	26	0	207
Cocoa and products	8,578	11,572	13,545	20,685	30,554
Tea	21,699	23,385	25,837	29,035	29,956
Malt beverages	5,241	6,150	6,588	5,908	6,680
Oilseeds and products	3,976	3,217	3,054	3,447	4,664
Oilseeds and oilnuts	1,950	1,802	1,643	1,986	2,059
Oils and waxes, vegetable	1,997	1,407	1,380	1,441	2,579
Seeds, field and garden	6,733	9,968	14,722	11,125	11,776
Essential oils	13,924	16,782	18,095	21,724	20,217
Drugs, crude natural	10,133	15,083	11,559	14,539	24,721
All other vegetable products	4,964	5,217	5,303	7,425	7,490
Total agricultural commodities	319,233	270,620	327,930	378,776	450,851
Total nonagricultural commodities	11,669,032	14,966,672	18,527,111	25,135,552	30,974,515
Total imports	11,988,500	15,237,300	18,855,041	25,514,328	31,425,366

/1 Imports for consumption, customs-value basis.

Sources: U.S. Department of Commerce, Bureau of the Census, "U.S. Agricultural Imports," country by commodity, annual printouts; USDA, Economic Research Service, U.S. Foreign Agricultural Trade Statistical Report, various issues.



Appendix table 12--China's calendar year grain trade, by country, 1986-92

Item	1986	1987	1988	1989	1990	1991	1992
1,000 tons							
Net grain trade	50	11,028	10,268	10,350	8,833	3,691	-1,209
Total exports	7,442	5,206	5,094	6,209	4,850	9,721	12,826
Total imports	7,492	16,234	15,362	16,559	13,683	13,412	11,617
Wheat imports	6,114	13,200	14,550	14,880	12,527	12,367	10,581
Argentina	534	810	304	1,049	858	391	0
Australia	2,616	4,432	397	1,677	1,386	1,364	218
Canada	2,538	5,699	7,532	1,761	4,136	4,504	5,670
EC	145	566	30	1,594	2,143	1,242	1,340
United States	226	1,564	5,768	8,293	3,919	4,586	3,334
Flour imports	167	461	102	144	80	154	104
Hong Kong	0	5	7	7	15	26	30
Australia	2	45	0	1	0	0	34
Canada	75	167	33	17	0	43	0
EC	0	99	na	26	0	36	0
United States	1	1	3	4	1	2	6
Japan	85	112	57	84	60	43	32
Rice imports /1	322	541	310	1,201	56	140	103
Taiwan	0	0	0	35	5	71	0
Burma	72	92	20	40	0	1	0
Korea, DPR	20	26	37	66	43	11	4
Thailand	230	316	253	1,002	5	49	95
United States	0	0	0	0	0	0	0
Coarse grain imports	787	1,752	190	314	1,020	751	829
Argentina	30	143	0	0	0	0	0
Australia	42	95	30	176	585	439	336
Canada	157	94	52	70	07	256	309
EC	0	0	0	0	0	0	138
Thailand	509	169	0	1	0	0	0
United States	32	1,239	107	54	356	31	0
Corn imports	588	1,541	109	68	368	0	0
Argentina	30	143	0	0	0	0	0
Australia	0	0	0	0	0	0	0
Canada	0	0	0	0	0	0	0
EC	0	0	0	0	0	0	0
Thailand	509	169	0	1	0	0	0
United States	32	1,228	107	54	356	0	0
Barley imports	199	211	81	246	652	751	829
Australia	42	95	30	176	585	439	336
Canada	157	94	52	70	67	256	309
EC	0	0	0	0	0	0	138
United States	0	11	0	0	0	31	0

continued--

Appendix table 12--China's calendar year grain trade, by country, 1986-92 -- continued

Item	1986	1987	1988	1989	1990	1991	1992
1,000 tons							
Total grain exports	7,442	5,206	5,094	6,209	4,850	9,721	12,826
Rice exports	950	1,022	698	314	325	688	948
Hong Kong	0	54	106	62	43	85	50
Iran	124	175	0	0	0	0	0
Macau	0	47	11	5	4	4	4
Sri Lanka	11	11	92	61	0	0	20
United Arab Emirates	82	10	6	5	9	4	11
Democratic Yemen	12	7	31	0	15	21	0
Benin	22	0	2	0	0	0	0
Angola	0	17	0	0	0	0	8
Guinea	21	0	19	15	0	16	79
Ivory Coast	81	109	0	0	0	15	0
Libya	41	31	20	20	0	49	89
Mauritius	50	51	54	47	42	80	32
France	11	0	0	0	0	0	0
Bulgaria	10	21	0	8	10	0	12
Czechoslovakia	41	41	30	20	30	0	36
German, DR	30	24	20	10	5	0	0
Poland	60	75	60	15	0	8	40
Romania	30	50	21	10	31	0	0
Switzerland	0	32	24	0	0	0	0
Brazil	70	0	0	0	0	0	0
Cuba	100	101	50	10	25	138	136
Peru	49	93	0	0	0	0	0
Indonesia	0	na	na	46	20	43	
Coarse grain exports	6,492	4,184	4,396	4,515	4,525	9,033	11,878
Corn exports	5,640	3,916	3,912	3,502	3,404	7,782	10,340
Korea, DPR	127	89	165	296	246	216	586
Hong Kong	761	218	238	116	60	167	108
Japan	2,709	1,600	1,504	1,289	918	1,785	2,154
Malaysia	0	20	144	182	112	454	1,386
Philippines	177	61	0	32	36	19	0
Singapore	16	42	172	127	59	233	129
Iran	0	0	0	0	60	333	381
Poland	104	104	0	0	0	0	61
Russia	1,603	1,720	1,447	1,183	na	855	608
Mexico	41	24	0	0	0	18	0
Republic of Korea	0	na	na	na	931	3,494	4,144
Thailand	0	0	2	0	14	0	387
Kazakhstan	na	na	na	na	na	na	164
Uzbekistan	na	na	na	na	na	na	37
Ukraine	na	na	na	na	na	na	20
Srilanka	0	0	0	0	0	49	62
Indonesia	0	0	15	15	0	136	41
Other grain exports: /2	852	268	484	1,013	1,121	1,251	1,538

na = not available.

/1 Only imports of semi-milled or milled rice.

/2 Includes millet, sorghum, buckwheat, broad bean, red bean, meng bean, kidney bean, and other beans.

Source: China's Customs Statistics, 1986-92.



Appendix table 13--China's calendar year trade in other agricultural commodities, by country, 1986-92

Item	1986	1987	1988	1989	1990	1991	1992
Tons							
Imports:							
Cotton	187	5,976	34,773	519,039	416,733	370,524	276,559
Pakistan	0	1,948	20,166	144,342	29,084	31,149	15,285
Egypt	0	3,822	1,986	1,284	1,319	0	133
Sudan	0	200	5,113	34,147	41,445	4,506	5,581
United States	0	1	940	227,908	210,175	229,252	165,577
Sugar	1,182,491	1,826,814	3,351,393	1,580,635	1,132,122	1,013,764	1,079,932
Australia	423,101	408,682	425,750	196,411	142,464	105,508	183,994
Cuba	430,679	396,415	1,350,261	794,097	868,406	738,333	773,759
Thailand	245,384	678,375	799,242	322,418	74,409	122,661	81,729
United States	30	177,164	0	451	574	115	0
Philippines	30	15,900	0	23	0	0	0
Exports:							
Cotton	558,089	754,576	468,002	272,483	167,282	199,980	144,620
Hong Kong	157,822	189,551	61,353	24,823	2,279	5,579	9,036
Indonesia	51,607	57,311	42,740	17,677	16,573	33,118	37,945
Japan	103,171	183,194	142,7894	63,324	47,308	50,511	31,278
USSR	43,714	43,862	7,322	29,579	25,216	0	0
Thailand	17,747	36,434	14,381	17,336	11,635	10,238	16,444
Rep. Korea	0	0	0	0	25,100	51,857	18,214
Soybeans	1,368,205	1,710,141	1,477,324	1,247,648	940,340	1,108,983	658,236
Hong Kong	9,108	16,107	39,425	16,503	11,511	10,238	7,882
Indonesia	260,413	273,785	308,252	162,405	278,693	455,169	165,113
Japan	343,410	296,833	299,484	297,732	278,227	280,540	260,340
Malaysia	150,308	126,446	120,799	125,252	54,164	240,424	169,642
Singapore	19,916	31,731	57,393	17,090	4,706	7,896	2,247
USSR	448,506	816,343	509,762	499,967	221,199	7	7
Rep. Korea	0	0	0	0	9,756	36,867	46,784

Source: China's Customs Statistics, 1986-92.

Appendix table 14--China's other agricultural output, 1986-93

	1986	1987	1988	1989	1990	1991	1992	1993
1,000 tons								
Sugar crops	58,525	55,503	61,874	58,038	72,145	84,187	88,080	76,240
Sugarcane	50,219	47,363	49,064	48,795	57,620	67,898	73,011	64,194
Sugarbeets	8,306	8,140	12,810	9,243	14,525	16,289	15,069	12,048
Tobacco	1,707	1,943	2,734	2,830	2,627	3,031	na	na
Flue-cured	1,374	1,636	2,337	2,405	2,259	2,670	3,119	3,036
Tea	461	508	545	535	540	542	560	600
Jute and hemp /1	710	569	540	660	726	513	619	672
Silk cocoons	336	354	394	488	534	584	660	756
Aquatic products	8,235	9,550	10,610	11,520	12,370	13,510	15,570	18,230
Rubber	210	238	240	243	264	296	309	326
Fruit	13,477	16,679	16,661	18,319	18,744	21,761	24,400	30,112

na = not available.

/1 Hemp data are on a processed basis (conversion is 2kg raw equals 1kg processed).

Sources: 1993 Statistical Yearbook; and 1994 China Statistics Abstract.



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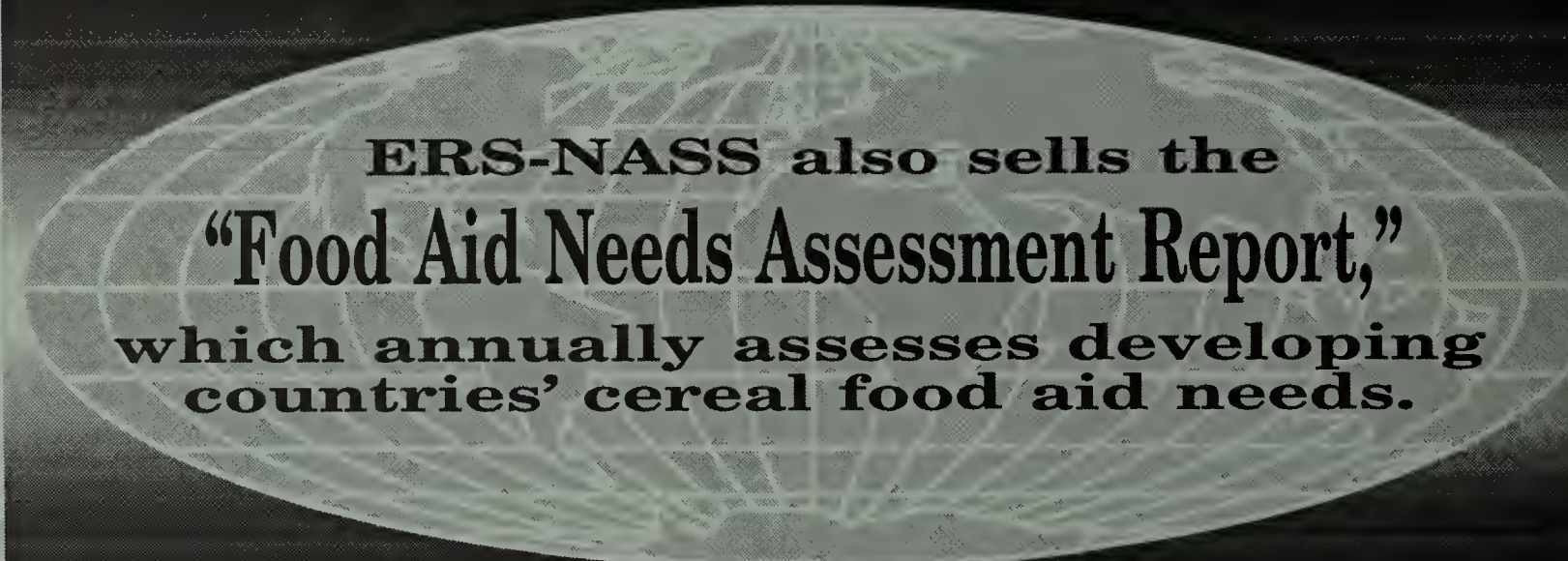
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